Highway Safety Improvement Program

Benefit-Cost Tool
DRAFT Users Manual

Illinois Department of Transportation

December 2008

Contents

1.0 Introduction

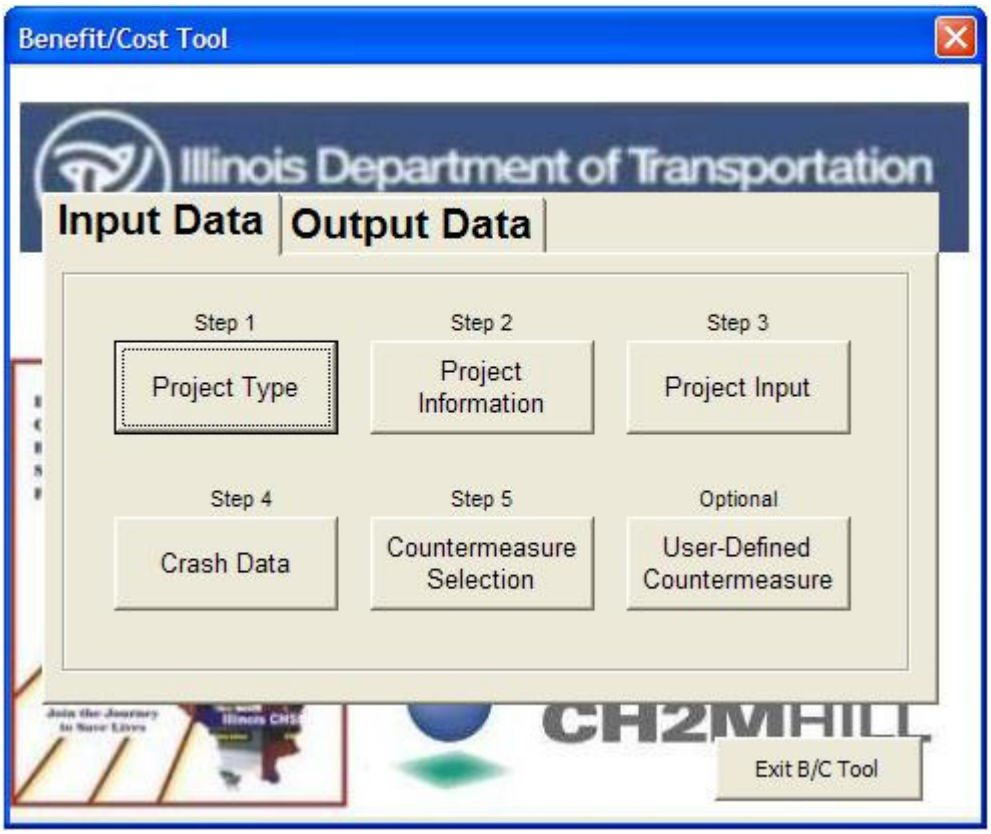
Benefit-cost analysis (BCA) is one of the tools used to determine if a project is appropriate for receipt of Highway Safety Improvement (HSIP) funding support. An approved project should have a safety focus and result in an improvement which will likely reduce the number of fatal and/or severe injury crashes. To facilitate the process, the Illinois Department of Transportation developed a BCA tool to aid in quick and accurate evaluation of highway improvement proposals.

This manual provides step-by-step instructions for using the BCA tool developed by IDOT. It also provides several example scenarios to assist the user in understanding use of the tool in project development. The final section of this document provides guidelines for appropriate benefit-cost values.

2.0 Step-by-Step Instructions

The image above shows the opening page of the B/C tool.

STEP 1: Start by pressing the **Start B/C Tool** button.

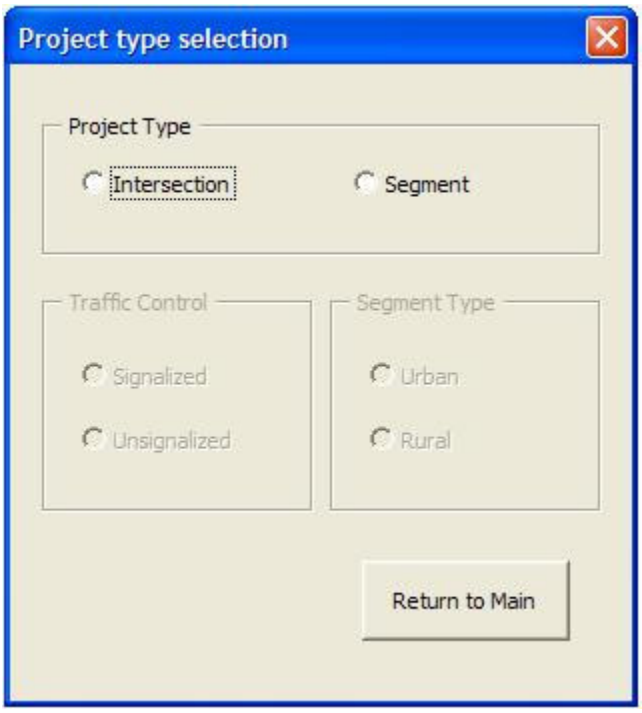


The main menu will open after selecting start. The main menu has two tabs located at the top of the screen. One is for entering Input Data and the other for obtaining Output Data.

STEP 2: Select the **Input Data** tab if necessary. This is the default and should have been open when starting the tool.

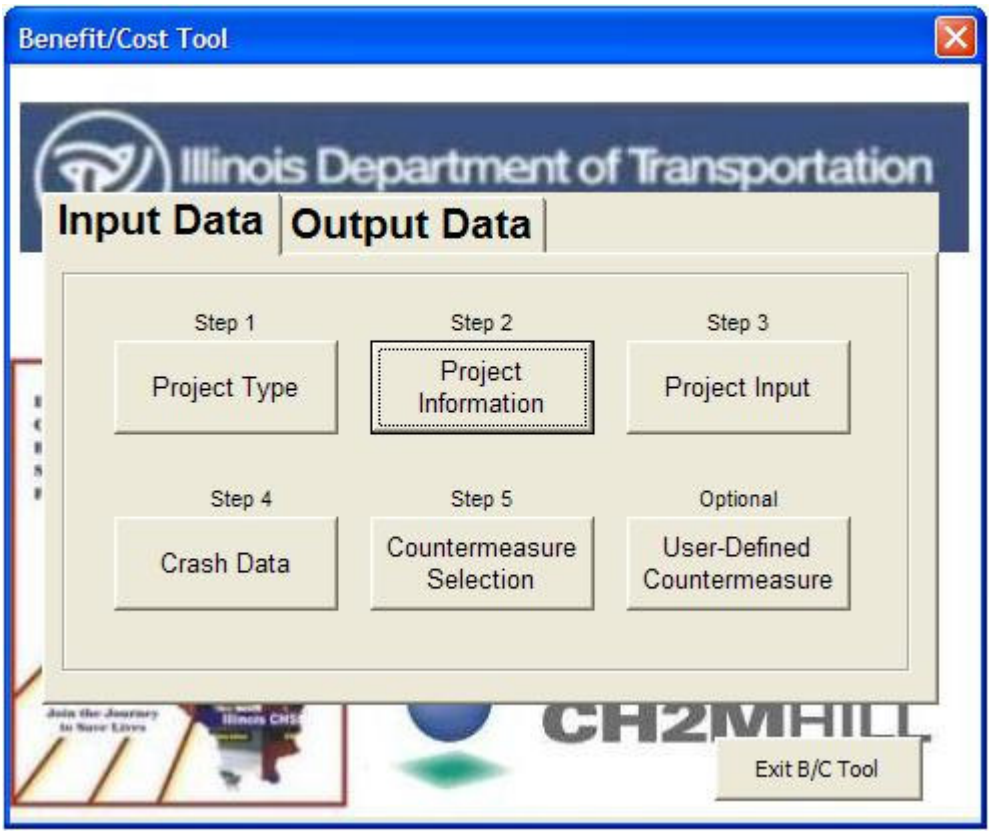
The input tab shows a series of steps. It is recommended that you follow the sequence of input steps as shown in the pop-up window; however you can come back to buttons to revise the data as needed.

STEP 3: Select the button labeled **Project Type**

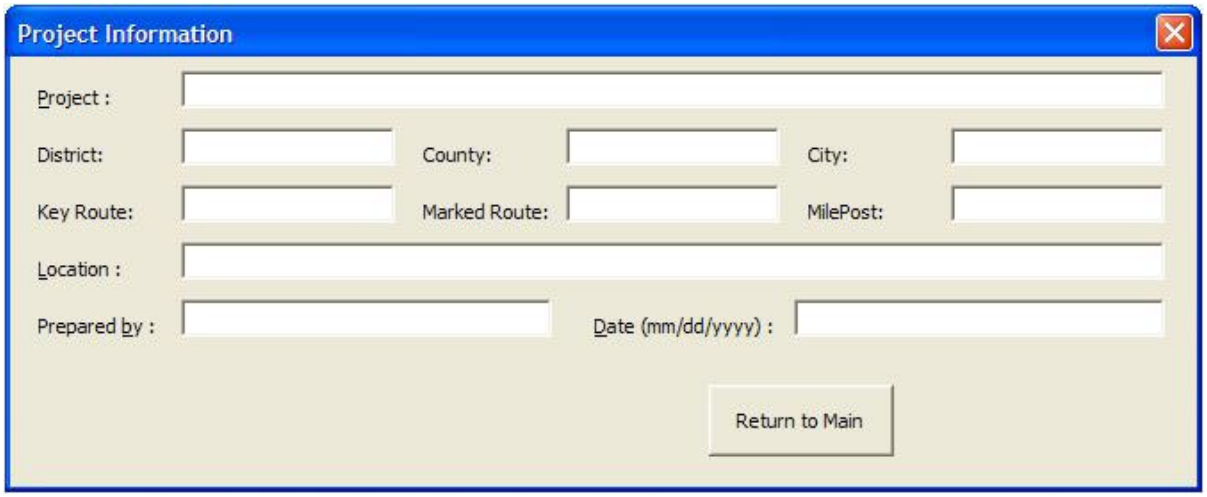


The Project Type Selection window will appear.

STEP 4: Select project type by clicking on the circle next to **Intersection** or **Segment** depending on the type of project you are analyzing. If **Intersection** is selected you will be given the option of **Signalized** or **Unsignalized**. If **Segment** is selected you will be given the option of **Urban** or **Rural**. Make the selection by clicking on the circle next to the appropriate category. When complete click on the **Return to Main** button to return to the main input window.

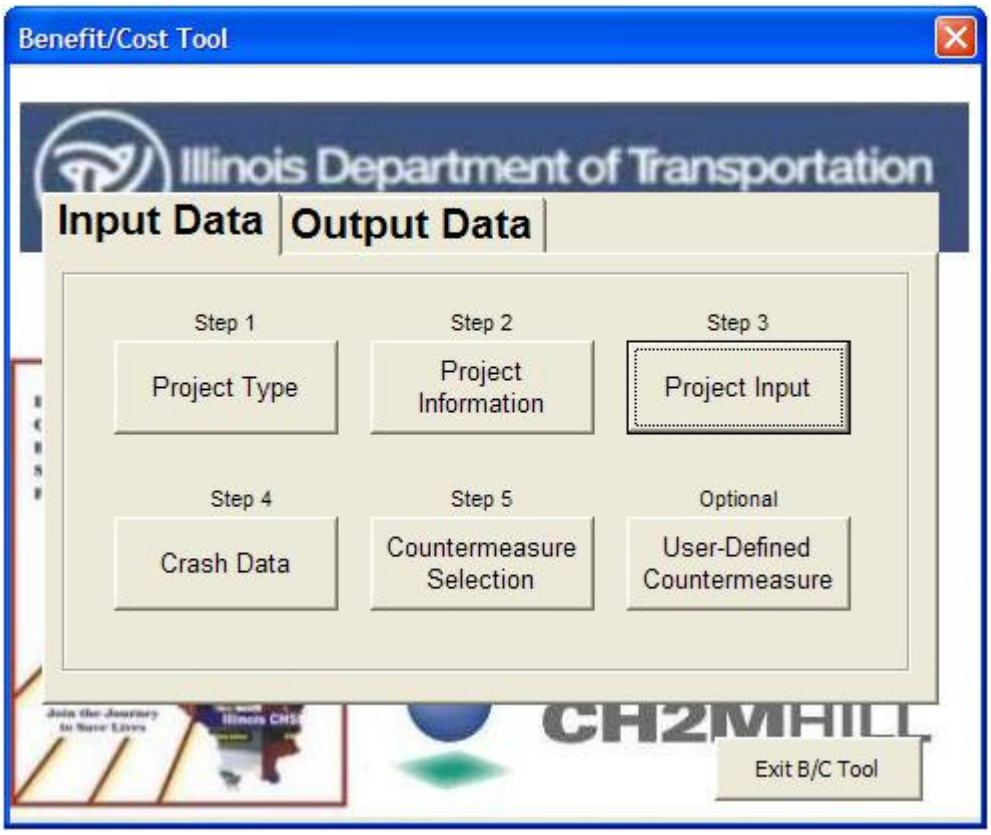


STEP 5: On the main menu, select the button labeled **Project Information**.



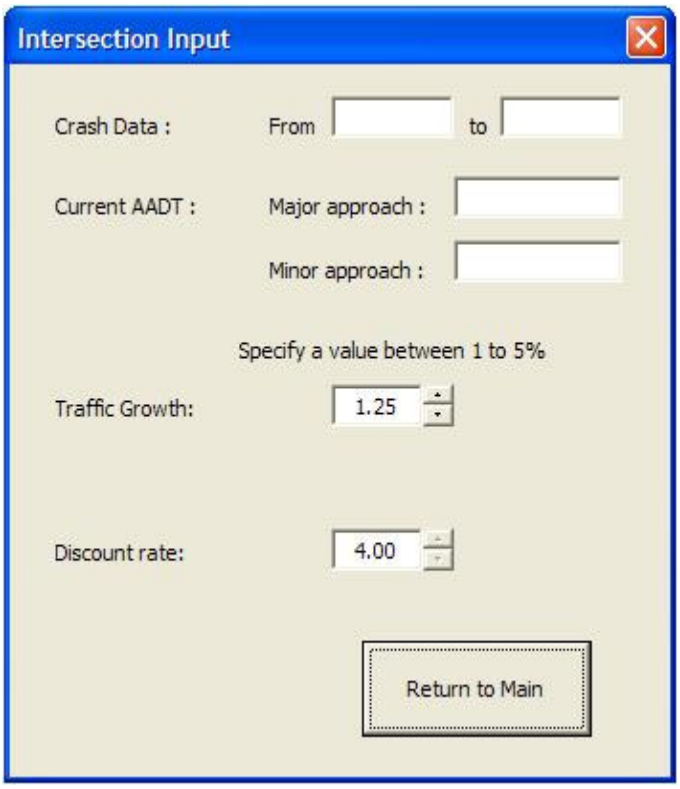
The Project Information window will open as shown above.

STEP 6: Complete the information in the boxes shown. For segments enter either key route or marked route and the beginning milepost station. Key Route refers to the Illinois Roadway Information System (IRIS) terminology and it is a universal identifier for any segment. Marked Route refers to the Division of Traffic Safety route inventory. The key route information is not necessary for intersections, but all information provided will assist in tracking projects. For the **Location** field enter a description like "Maple Road and Oak Street" for an intersection or "Maple Road between Oak Street and Walnut Street" for a segment. When all fields have been completed, click on **Return to Main**.

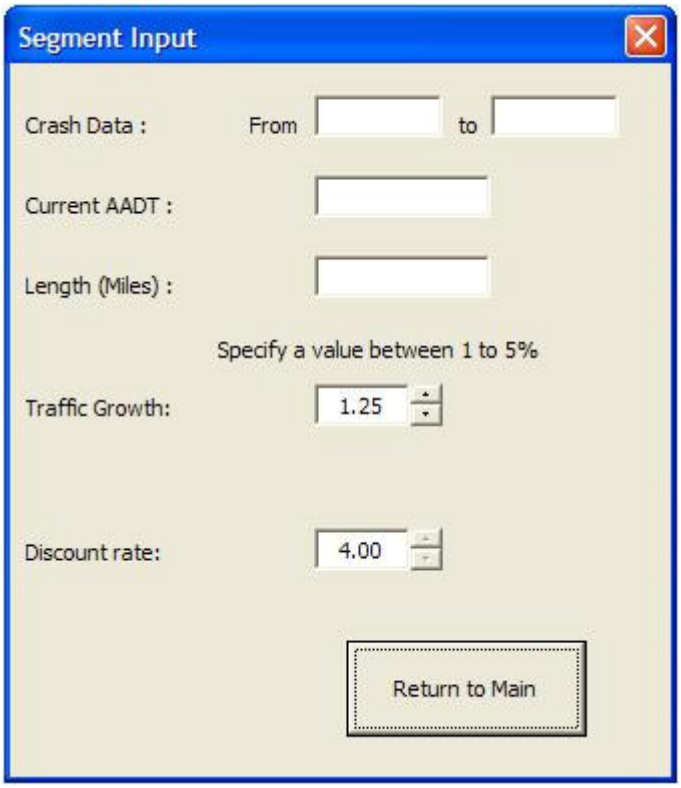


The main menu will re-open.

STEP 7: Select the button labeled **Project Input**.

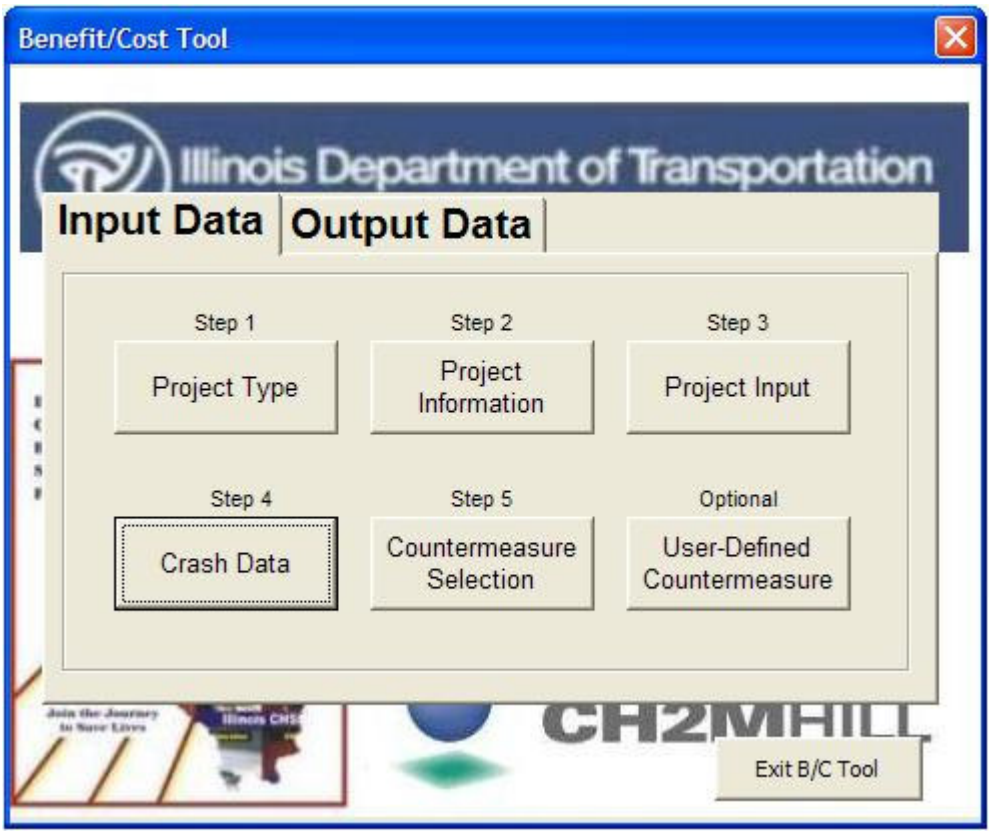


If intersection project type was selected, the project input window shown above will appear.



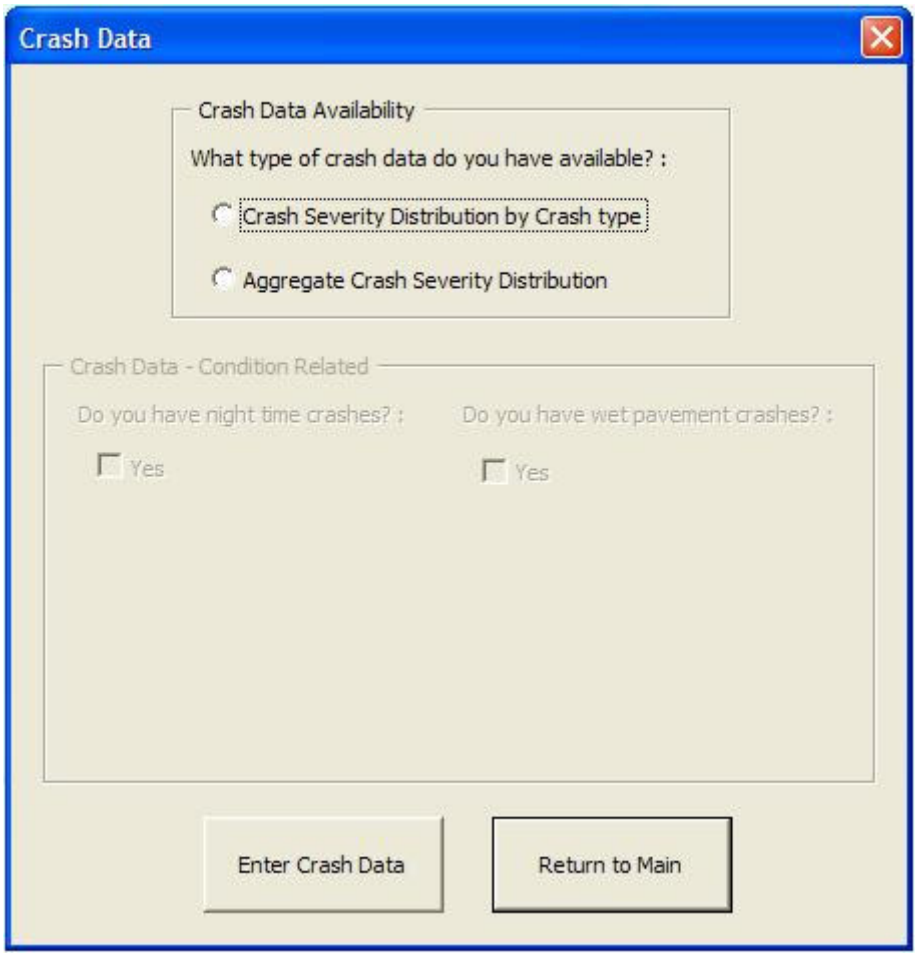
If segment project type was selected, the above project input window will appear.

STEP 8: Input the information requested in the fields of either the **Intersection Input** or **Segment Input** window. For **Crash Data,** enter the period for which crash data is available (for example, From 2001 to 2005). Enter the **Current AADT**(Average Annual Daily Traffic), length of project if applicable, and the annual traffic growth. The annual **traffic growth** should be a number between 1 and 5. If no selection is made, the default value of 1.25 will be shown. If the user enters a value less than one, it is assumed that the traffic growth is declining. The **discount rate** cannot be modified from the default value of 4.00. When complete with all fields click on **Return to Main**.



The main menu will re-open.

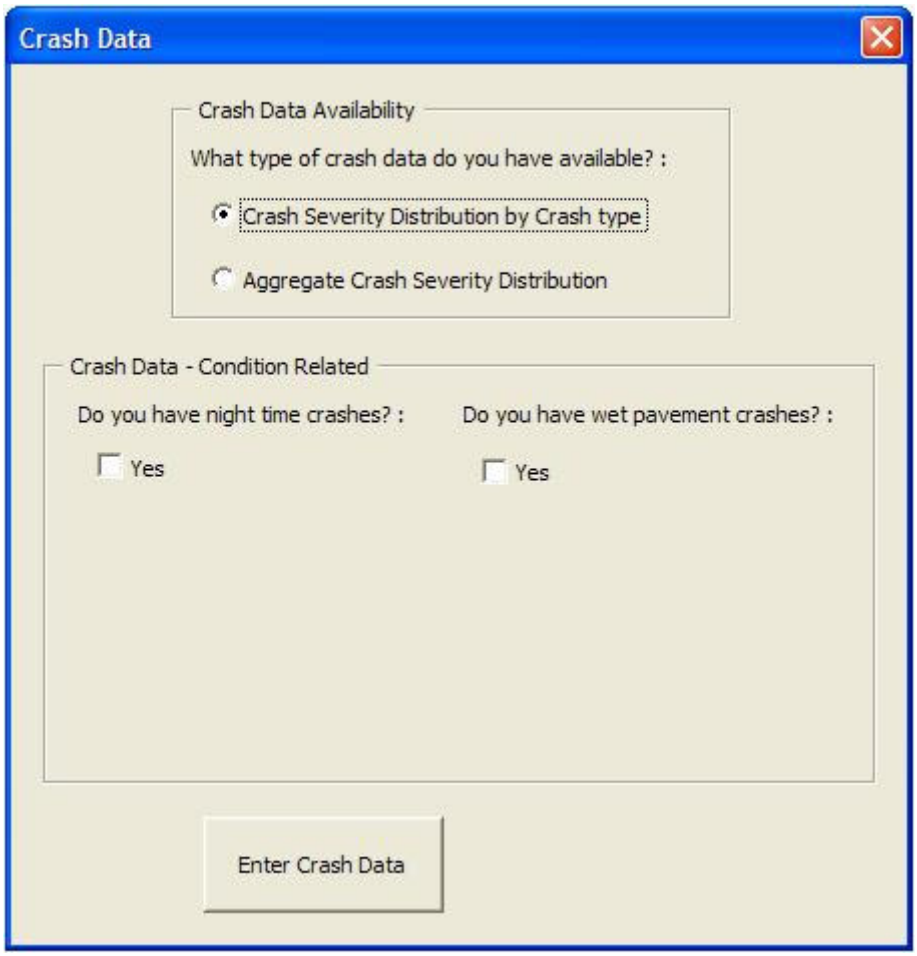
STEP 9: Select the button labeled **Crash Data**.



The above window will open.

STEP 10: If crash type and crash severity data are available, select **Crash Severity Distribution by Crash Type** by clicking on the circle next to the text. If crash type data are not available, select the **Aggregate Crash Severity Distribution** category by clicking on the circle next to the text. In most cases crash type data will be available. This is the preferred condition since countermeasures are applied to reduce particular crash types.

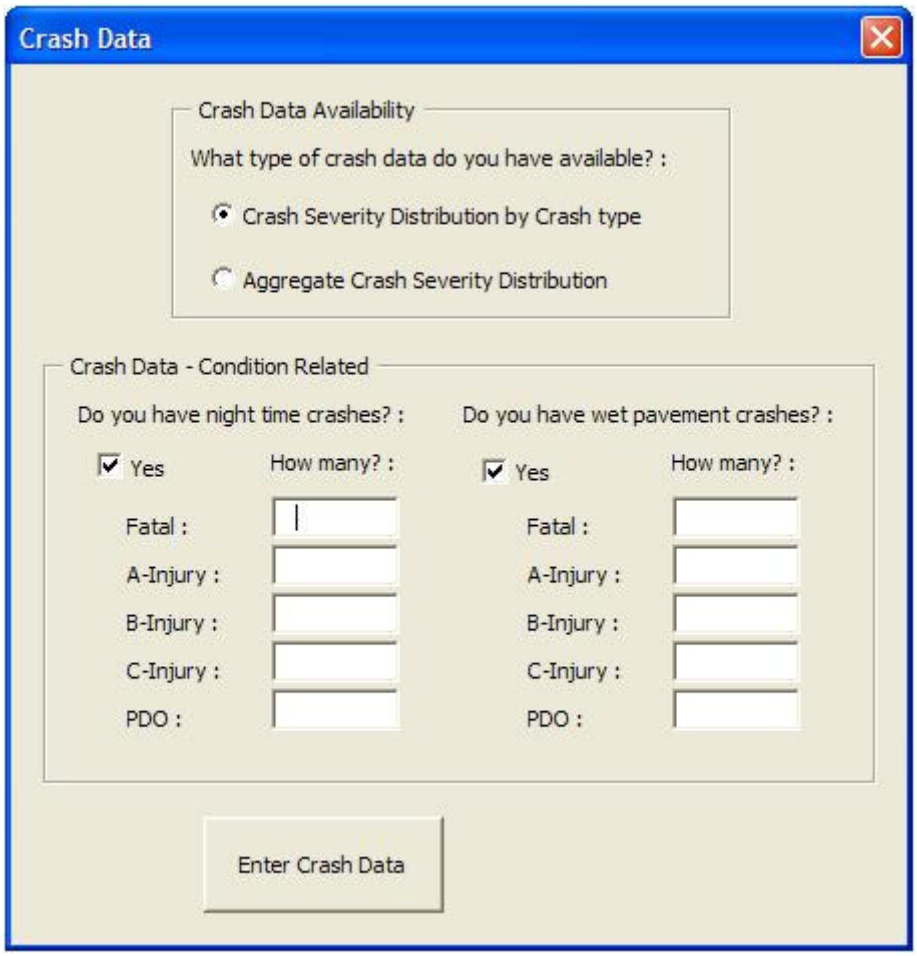
If **Crash Severity Distribution by Crash Type** is selected, follow STEPs 11A to 13A. If **Aggregate Crash Severity Distribution** is selected, skip to STEP 11B and follow to STEP 12B.



When **Crash Severity Distribution by Crash Type** is selected **Crash Data – Condition Related** will highlight as shown in the above window.

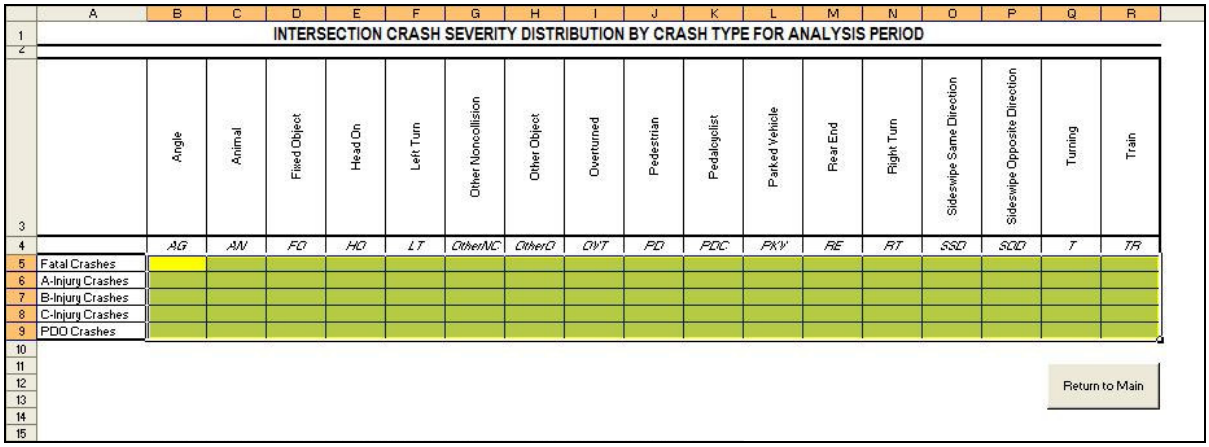
STEP 11A: If there are night time crashes in your data set, click on the **Yes** box following the question, **Do you have night time crashes?** If there are wet pavement crashes in your data set, click on the **Yes** box following the question, **Do you have wet pavement crashes?**

See page 27 to learn more about obtaining crash information from the crash reports.



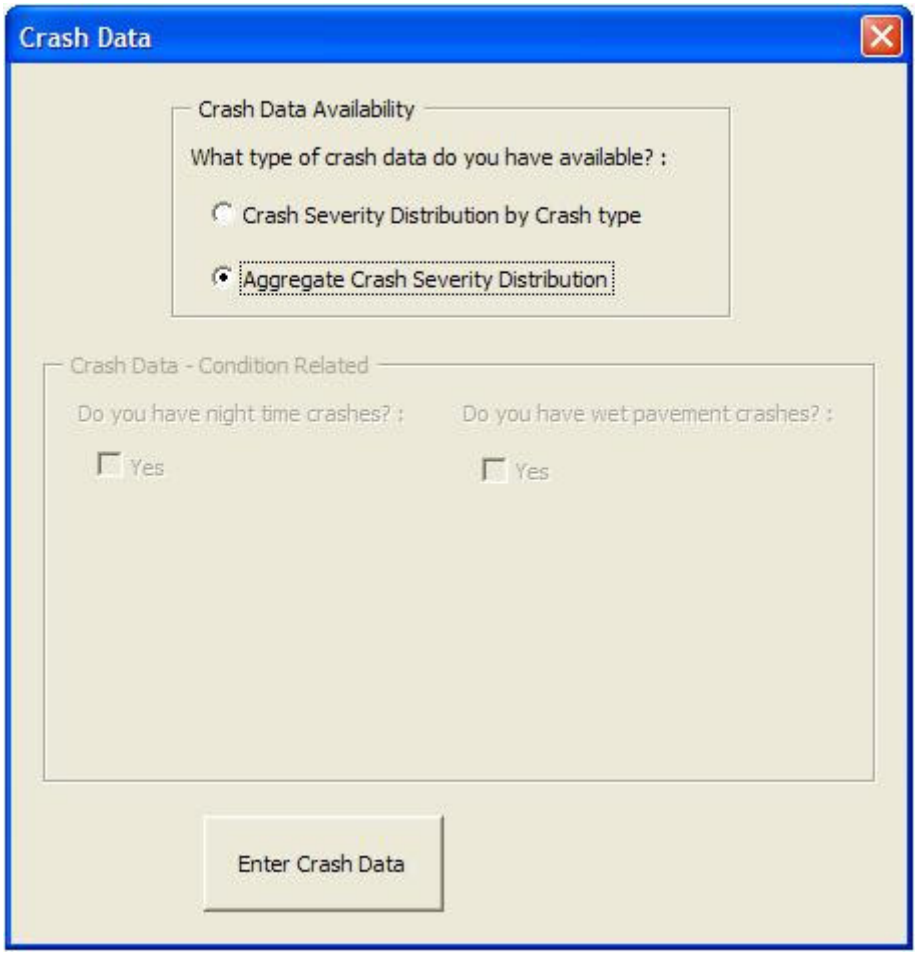
If you have clicked "Yes" to questions regarding either night time or wet pavement crashes, boxes will become available to complete crash severity for the night or wet pavement crashes. These are shown in the window above.

STEP 12A: Enter the number of crashes by severity that have occurred at night or under wet pavement conditions during the analysis period. When complete, select the **Enter Crash Data** button.

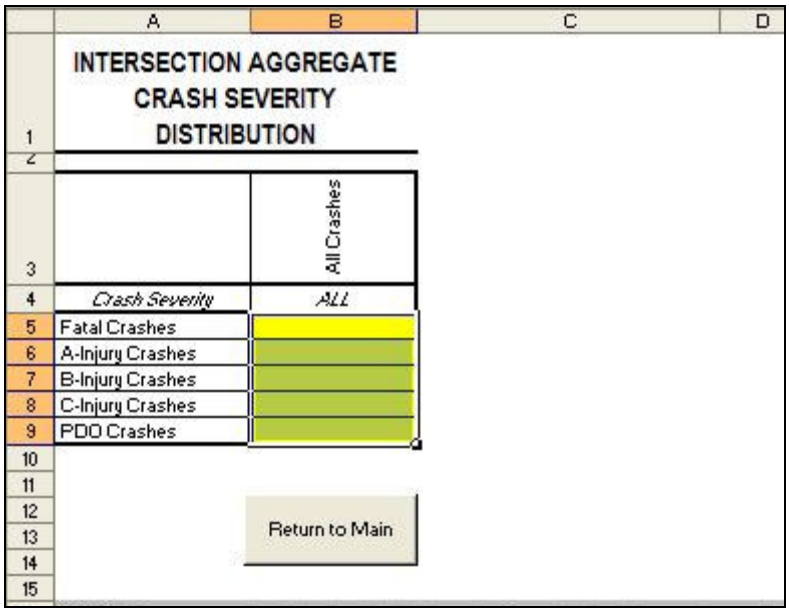


After selecting "Enter Crash Data," the input box, "Intersection Crash Severity by Crash Type for Analysis Period" will appear.

STEP 13A: Enter the crash data for the analysis period by crash type and severity. Individual crashes should only be entered once based on the first event of the crash. When complete, select the **Return to Main** button and continue with STEP 14. Be sure to "enter" the last data entered by using the **Enter** key or clicking another cell before attempting to click the **Return to Main** button.

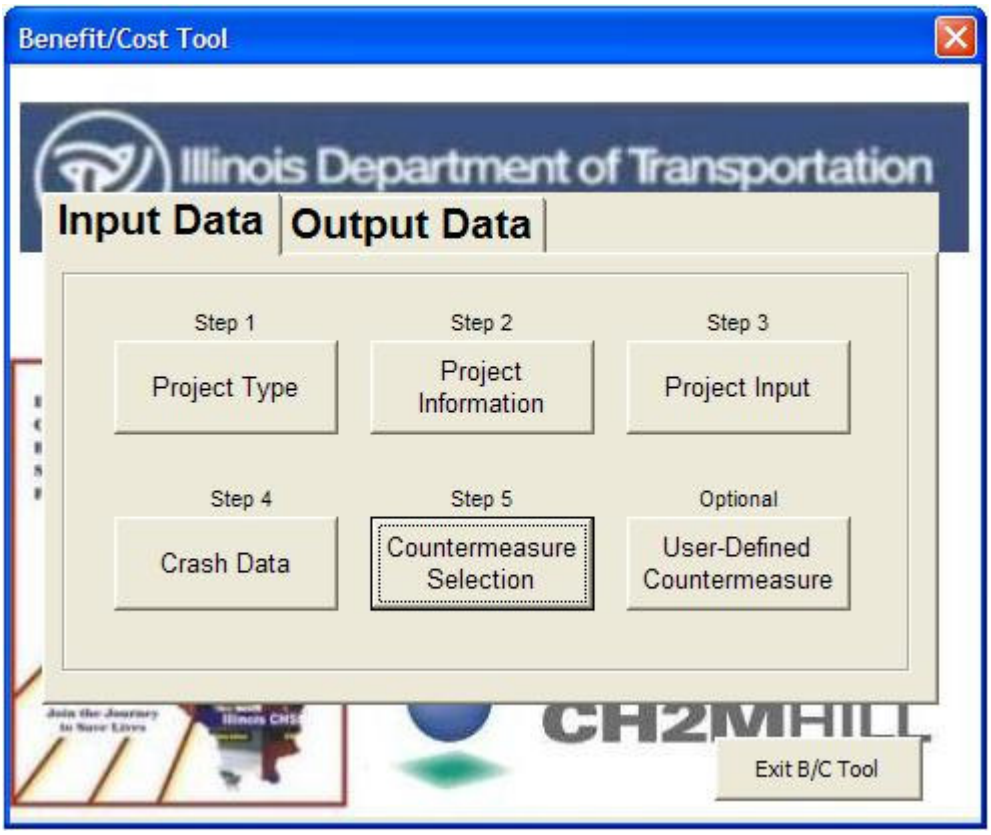


STEP 11B: If crash type by severity is not available, click on the circle next to **Aggregate Crash Severity Distribution** in the Crash Data screen. Then click on **Enter Crash Data** to enter aggregate crashes by severity. It is important to notice that the user will not be able to input night time or wet pavement crashes with an aggregate crash severity distribution. If **Aggregate Crash Severity Distribution** is selected, the **Crash Data – Condition Related** frame will not become available as is shown in the figure above.



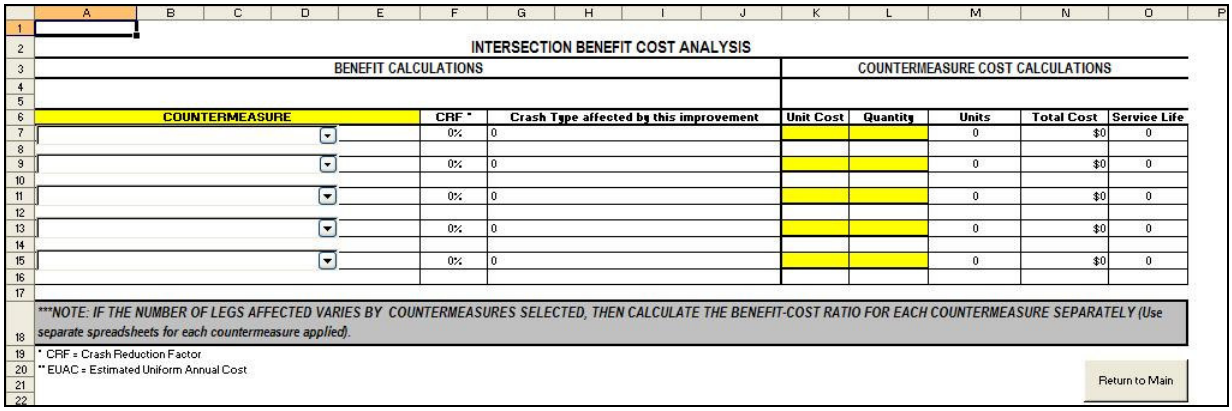
After selecting **Enter Crash Data** the input box shown above will appear. The box shown is for intersections, but a similar table will appear for segments.

STEP 12B: Enter the number of crashes by severity that have occurred during the analysis period. When complete, select the **Return to Main** button. Be sure to "enter" the last data entered by using the Enter key or clicking another cell before attempting to click the Return to Main button.



The main menu will re-open.

STEP 14: Select the button labeled **Countermeasure Selection**.



INTERSECTION BENEFIT COST ANALYSIS

BENEFIT CALCULATIONS			COUNTERMEASURE COST CALCULATIONS				
COUNTERMEASURE	CRF *	Crash Type affected by this improvement	Unit Cost	Quantity	Units	Total Cost	Service Life
	0%	0			0	$0	0
	0%	0			0	$0	0
	0%	0			0	$0	0
	0%	0			0	$0	0
	0%	0			0	$0	0

***NOTE: IF THE NUMBER OF LEGS AFFECTED VARIES BY COUNTERMEASURES SELECTED, THEN CALCULATE THE BENEFIT-COST RATIO FOR EACH COUNTERMEASURE SEPARATELY (Use separate spreadsheets for each countermeasure applied).

* CRF = Crash Reduction Factor
** EUAC = Estimated Uniform Annual Cost

Return to Main

If intersection project type was selected, the countermeasure table shown above will appear. If segment project type was selected, a similar countermeasure table will appear.

STEP 15: Review the list of countermeasures shown in Table 1 for intersections and Table 2 for segment. Select countermeasures that affect the predominant crash types in the data set for the intersection or segment to be analyzed. It is also recommended that you review the "Desktop Reference for Crash Reduction Factors" published by the USDOT and FHWA on September 2007 for additional countermeasures and current crash reduction factors (CRF). A CRF is a percentage of crash reduction that can be expected for implementing specific countermeasure. For example, if shoulder rumble strips are added to a facility there is an expected thirty percent reduction in the number of fixed object and overturn crashes.

TABLE 1: INTERSECTION COUNTERMEASURES

COUNTERMEASURES	Unit	Service Life	CRF	Crash Type Affected
1.1 General				
1.1.1 Improvement/Realignment/Reconstruction URBAN	Unit Qnty	15	50%	All
1.1.2 Improvement/Realignment/Reconstruction RURAL	Unit Qnty	15	30%	All
1.2 Pavement				
1.2.1 Widening and Resurfacing or Widening alone	Miles	15	25%	All
1.2.2 Resurfacing alone	Miles	10	-	
1.2.3 De-Slick (formerly known as skidproofing)	Miles	5	45%	WP
1.2.4 Rumble Strips (Shoulder)	Miles	3	30%	FO,OVT-off the road
1.2.5 Rumble Strips (Centerline)	Miles	3	-	
1.2.6 Rumble Strips (Transverse)	Miles	3	25%	All
1.2.7 Channelization	Miles	15	50%	RE,HO,SSD,SOD,LT,FO,OVT,T,RT
1.2.8 Raised Reflective Marker Median	Miles	15	50%	HO,SOD,LT,T,RT
1.2.9 Rumble Strip Median	Miles	10	50%	HO,SOD,LT,T,RT
1.2.10 Thermoplastic or Preformed Tape Median	Miles	3	50%	RE,HO,SSD,SOD,LT,RT,T
1.2.11 Painted Median	Miles	2	50%	RE,HO,SSD,SOD,LT,RT,T
1.2.12 Lane Addition	Unit Qnty	15	50%	RE,SSD, LT,RT,T
1.2.13 Left Turn Lane	Unit Qnty	15	25%	Each leg w/added Left turn, RE,SSD,SOD,LT
1.2.14 Right Turn Lane	Unit Qnty	15	25%	Each leg w/added Right turn, RE,SSD,RT
1.2.15 Bidirectional Left Turn Lane	Unit Qnty	15	50%	RE,HO,SSD,SOD,LT
1.2.16 Left Turn Acceleration Lane	Unit Qnty	15	50%	RE,SOD,SSD,AG,LT
1.2.17 Right Turn Acceleration Lane	Unit Qnty	15	50%	RE,SSD,RT
1.2.18 Deceleration Lane	Unit Qnty	15	50%	RE,SSD,RT
1.2.19 One-Way Couple	Unit Qnty	15	50%	All
1.2.20 Install Roundabout	Unit Qnty	15	60%	All
1.2.21 Install Passing Lane	Unit Qnty	15	25%	All
1.2.22 Increase Width of Paved Shoulder	Miles	10	10%	All
1.2.23 Increase Lane Width	Miles	15	10%	All

TABLE 1: INTERSECTION COUNTERMEASURES

COUNTERMEASURES	Unit	Service Life	CRF	Crash Type Affected
1.3 Signing				
1.3.1 Modernization	Unit Qnty	6	25%	All
1.3.2 Installation	Unit Qnty	6	40%	All
1.3.3 Speed Signing	Unit Qnty	6	40%	All
1.3.4 Advance Warning Signs	Unit Qnty	6	25%	All
1.3.5 Street Name Signs	Unit Qnty	6	25%	All
1.3.6 Four Way Stop	Unit Qnty	5	50%	All
1.3.7 Minor Leg Stop	Unit Qnty	5	40%	AG,LT,RT,T
1.3.8 Yield Sign	Unit Qnty	5	40%	AG,LT,RT,T
1.3.9 Changeable Message Signs	Unit Qnty	6	10%	All
1.3.10 Delineators	Unit Qnty	4	40%	All
1.3.11 Overhead Sign Truss	Unit Qnty	15	40%	RE,SOD
1.4 Signalization				
1.4.1 Modernization	Unit Qnty	10	25%	PD,FO,RE,SSD,SOD,AG,LT,RT,T
1.4.2 Install Traffic Signals	Unit Qnty	15	23%,-38%	23% All Other. -38% RE. 67% RAG
1.4.3 Relocation of Signal Supports	Unit Qnty	15	25%	FO
1.4.4 Advance Warning with Flasher	Unit Qnty	10	15%	OVT,FO,RE,SSD,SOD,AG,LT,RT,T
1.4.5 Red/Yellow Flashing Beacon	Unit Qnty	10	NR	Not recommended.
1.4.6 Red Flashing Beacon	Unit Qnty	10	45%	AG
1.4.7 Add Left Turn Phase with Left Turn Lane	Unit Qnty	10	35%	All
1.4.8 Add Left Turn Phase without Left Turn Lane	Unit Qnty	10	25%	All
1.4.9 Phase Adjustment	Unit Qnty	10	25%	All
1.4.10 Increase to 12 Inch Lens	Unit Qnty	10	25%	All
1.4.11 Add Traffic Actuation	Unit Qnty	10	25%	RE,AG,LT,RT,T
1.4.12 Time Lane Control	Unit Qnty	10	25%	HO,SOD
1.4.13 Optical Programmed	Unit Qnty	10	25%	RE,AG,LT,RT,T
1.4.14 Add Pedestrian Controls	Unit Qnty	10	25%	PD,PDC
1.4.15 Add Mast Arms and Signal Head per Lane	Unit Qnty	15	25%	RE,AG,LT,RT,T
1.4.16 Safety Lighting	Unit Qnty	15	50%	50% NGT

TABLE 1: INTERSECTION COUNTERMEASURES

COUNTERMEASURES	Unit	Service Life	CRF	Crash Type Affected
1.4.17 Install Automated Enforcement of Red Light Violations	Unit Qnty	10	25%	AG, -15% RE
1.4.18 User defined 01				
1.4.19 User defined 02				
1.4.20 User defined 03				

TABLE 2: SEGMENT COUNTERMEASURES

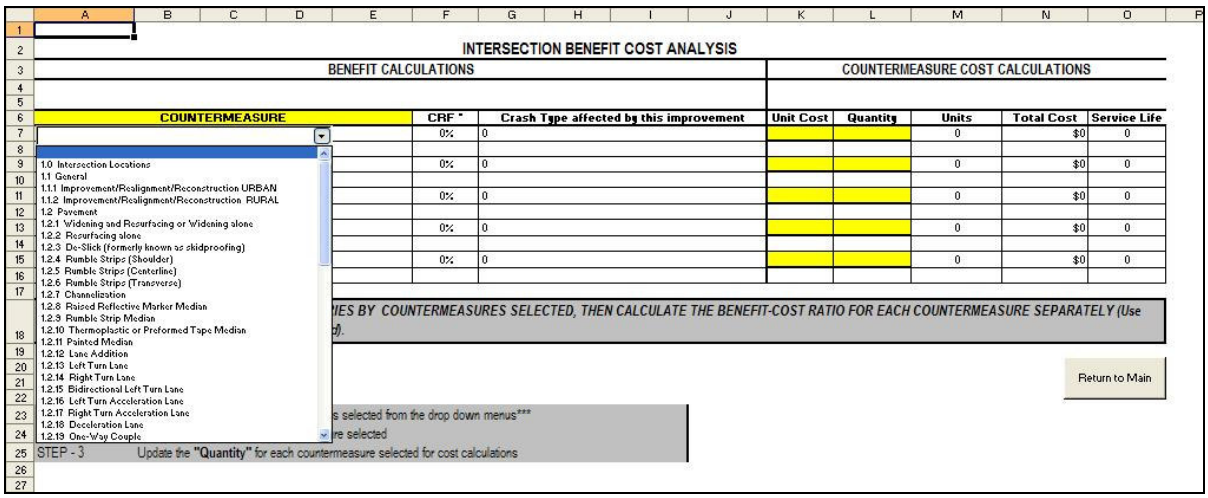
COUNTERMEASURES	Unit	Service Life	CRF	Crash Type Affected
2.1 Pavement Treatments				
2.1.1 Widening and Resurfacing or Widening alone	Miles	15	25%	All
2.1.2 Resurfacing alone	Miles	10	0%	No CRF identified
2.1.3 De-Slick (formerly known as skidproofing)	Miles	5	45%	WP
2.1.4 Rumble Strips (Shoulder)	Miles	3	30%	FO,OVT
2.1.5 Rumble Strips (Centerline)	Miles	3	20%	HO,SOD
2.2 Pavement Marking				
2.2.1 General Pavement Marking	Miles	1	30%	All
2.2.2 Raised Reflective Markers	Miles	4	30%	NGT on tangent sections. For curves, see table 1 of the HSIP Policy.
2.3 Railroad Crossing				
2.3.1 Modification	Miles	15	50%	TR,FO,RE,OVT
2.3.2 Gates	Miles	15	60%	TR,FO,RE,OVT
2.3.3 Crossbucks	Miles	15	60%	TR,FO,OVT
2.3.4 Flashing lights	Unit Qnty	15	60%	TR,FO,RE,OVT
2.3.5 Flashing Beacons	Unit Qnty	15	60%	TR,FO,RE,OVT
2.3.6 Warning Bells	Unit Qnty	15	50%	TR
2.3.7 Pavement Markings	Miles	2	30%	TR,RE,FO,OVT
2.3.8 Warning Signs - Standard	Unit Qnty	2	40%	TR,FO,RE,OVT

TABLE 2: SEGMENT COUNTERMEASURES

COUNTERMEASURES	Unit	Service Life	CRF	Crash Type Affected
2.1 Pavement Treatments				
2.1.1 Widening and Resurfacing or Widening alone	Miles	15	25%	All
2.3.9 Warning Signs - Special	Unit Qnty	5	40%	TR,FO,RE,OVT
2.3.10 Delineators	Miles	4	40%	TR,FO,OVT
2.3.11 Safety Lighting	Unit Qnty	15	50%	TR,FO,RE,OVT
2.3.12 Resurfacing	Miles	10	25%	TR,FO,RE,OVT
2.3.13 Grade Separation	Unit Qnty	20	100%	All
2.3.14 Removal (specify which type of removal)	Miles	20	50%	All
2.4 Bridge				
2.4.1 General Repair	Miles	10	15%	PKV, HO,SOD,SSD,FO,OVT
2.4.2 Widen/Resurface	Miles	15	15%	FO,HO,SOD,SSD,OVT
2.4.3 Widening	Miles	15	15%	FO,HO,SOD,SSD,OVT
2.4.4 De-Slick	Miles	5	45%	WP
2.4.5 Grooving	Miles	7	45%	WP
2.4.6 Frost/Ice Detectors - Sign	Unit Qnty	10	25%	FO,HO,SOD,SSD,OVT
2.4.7 Frost/Ice Detectors - Radio	Unit Qnty	10	25%	PKV, HO,SOD,SSD,FO,OVT
2.4.8 Guardrail	Miles	10	15%	FO,OVT
2.4.9 Separation between Pedestrians/Traffic	Miles	15	95%	PD,PDC,FO,OVT
2.4.10 Safety Lighting	Unit Qnty	15	50%	NGT
2.4.11 Delineators	Miles	4	15%	FO,OVT
2.4.12 Impact Attenuators	Unit Qnty	3	70%	FO,OVT
2.4.13 Reconstruction	Miles	20	50%	FO,HO,SOD,SSD,OVT
2.5 Curves				
2.5.1 Realignment/Reconstruction URBAN	Miles	15	35%	OVT,FO,HO,SSD,SOD
2.5.2 Superelevation	Miles	15		Variable, see table 2 in the HSIP Policy.
2.5.3 Daylighting	Miles	15	30%	OVT,FO,HO,SSD,SOD
2.5.4 Widening and Resurfacing or Widening alone	Miles	15	25%	All
2.5.5 De-Slick (formerly known as	Miles	5	45%	WP

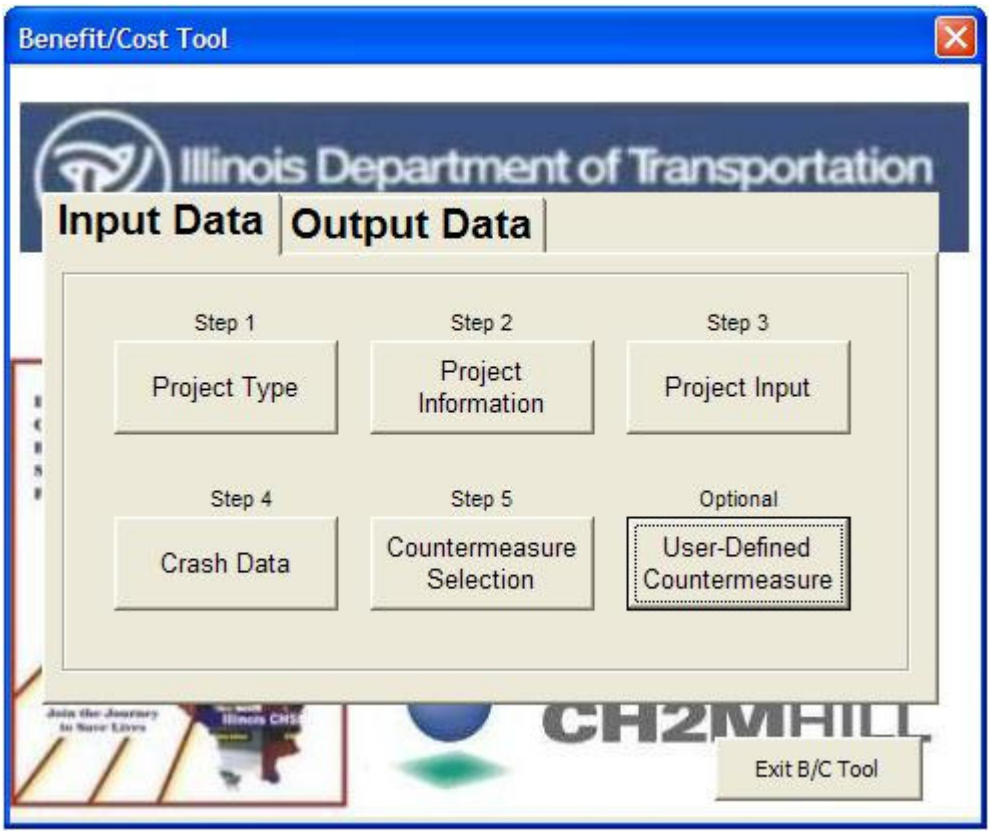
TABLE 2: SEGMENT COUNTERMEASURES

COUNTERMEASURES	Unit	Service Life	CRF	Crash Type Affected
2.1 Pavement Treatments				
2.1.1 Widening and Resurfacing or Widening alone	Miles	15	25%	All
skidproofing)				
2.5.6 Guardrail	Miles	10	40%	FO,OVT
2.5.7 Advance Warning Sign	Unit Qnty	5	20%	All
2.5.8 Chevrons or Delineators	Unit Qnty	4	40%	OVT,HO,SOD,FO
2.5.9 Relocation	Unit Qnty	15	45%	All
2.6 Roadside Safety				
2.6.1 General/Fixed Obstacle Removal	Unit Qnty	20	50%	FO,OVT
2.6.2 Curb Parking Removal	Unit Qnty	20	50%	PKV,RE,FO,OVT
2.6.3 Guardrail	Miles	10	15%	FO,OVT
2.6.4 Utility Adjustment	Miles	15	45%	FO,OVT involving utility hazards
2.6.5 Drainage Improvement	Miles	10	10%	All
2.6.7 Shoulder Improvement	Miles	5	10%	FO,OVT
2.6.8 Impact Attenuators	Miles	3	70%	FO,OVT
2.6.9 Glare Shields	Miles	10	15%	SSD,AG,FO,OVT
2.6.10 Fencing	Miles	10	15%	All
2.7 Other				
2.7.1 Turnouts (Mailbox or other)	Miles	15	50%	Entering or exiting vehicles from shoulder area
2.7.2 Ramp Improvement	Miles	15		Variable. See table in the HSIP Policy.
2.7.3 User defined 01				
2.7.4 User defined 02				
2.7.5 User defined 03				



STEP 16: Select the appropriate countermeasures using the pull-down menu under the countermeasure tab. The tool allows for selection and analysis of up to 5 countermeasures for one project. After selecting the countermeasure, the CRF, crash type affected, service life and countermeasure units will automatically populate. Note that if only aggregate crash data are provided, the tool will only calculate a benefit for countermeasures that affect All Crash Types.

STEP 17: Enter the **Unit Cost** and **Quantity** for each countermeasure. For example, enter $10,000 and 1 if you are adding signing of this cost at one intersection. When complete, select **Return to Main.** Be sure to "enter" the last data entered by using the Enter key or clicking another cell before attempting to click the Return to Main button.



If you wish to add a countermeasure or use a countermeasure that is not listed, click on the Optional **User-Defined Countermeasure** button as shown in the above image.

	COUNTERMEASURES LIST: CRASH REDUCTION FACTORS, COS										
4	COUNTERMEASURES	Cost	Unit	Service Life	CRF	Crash Type Affected by Countermeasures	RE	RT	SSD	SCD	T
6	Non-Intersection (Segment) Locations										
7	*Rumble Strips (Shoulder)*		Miles	3	30%	FO,OVT					
8	*General Pavement Marking*		Miles	1	30%	All					
9	*Curb Parking Removal*		Unit Qnty	20	50%	PKV,RE	50%				
12	*User defined 01*										
13	*User defined 02*										
14	*User defined 03*										
28	Note: If you have different CRFs for one countermeasure (See Example: cell F9), it is strongly suggested to input the CRFs under the proper crash type manually.										
32	Place new CRFs										
36	Return to Main										

Legend	
All	All Crashes
ANG	Angle
ANM	Animal
FIX	Fixed Object

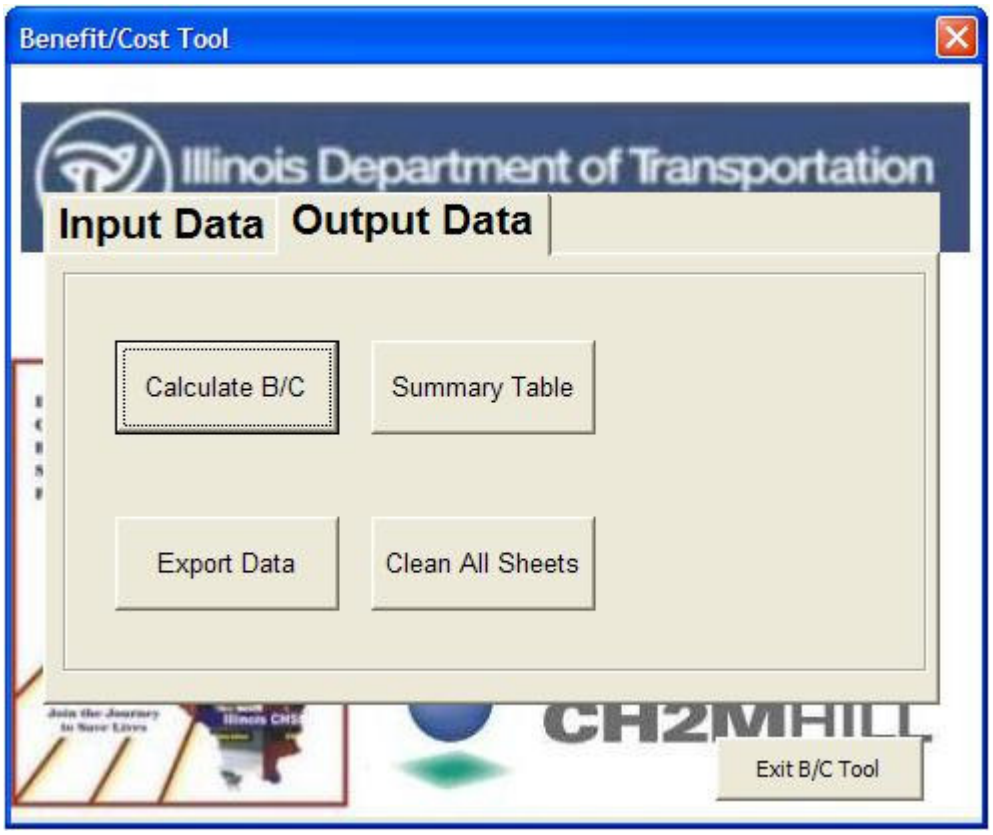
After selecting "User-Defined Countermeasure" the input box shown above will appear. The box shown is for segments, but a similar table will appear for intersections.

STEP 18: Enter the user-defined countermeasure description in the first box under countermeasures, shown in yellow. This box currently contains the text "User defined 01". Enter the unit of measurement, service life, CRF, and crash type affected to the right of the countermeasure description. Refer to the "Desktop Reference for Crash Reduction Factors" as discussed above to obtain CRF values. Crash Type Affected should be entered by using the abbreviations shown in the table below, separated by commas without spaces. Examples are shown in the window above the input data.

Legend	
All	All Crashes
AG	Angle
AN	Animal
FO	Fixed Object
HO	Head On
LT	Left Turn
OtherNC	Other Noncollision
OtherO	Other Object
OVT	Overturned
PD	Pedestrian
PDC	Pedalcyclist
PKV	Parked Vehicle
RE	Rear End
RT	Right Turn
SSD	Sideswipe Same Direction
SOD	Sideswipe Opposite Direction
T	Turning
TR	Train
NGT	Night Time crash
WP	Wet Pavement

STEP 19: After completing the user defined countermeasure information, select the "Place New CRFs" button. This will populate the CRFs to the appropriate crash types in the columns to the right of the input data. Additional user defined countermeasures can be added in the User defined02 and User defined 03 lines.

When complete select **Return to Main**.



When all input data has been completed, select the **Output Data** tab on the main menu and the screen shown above will appear.

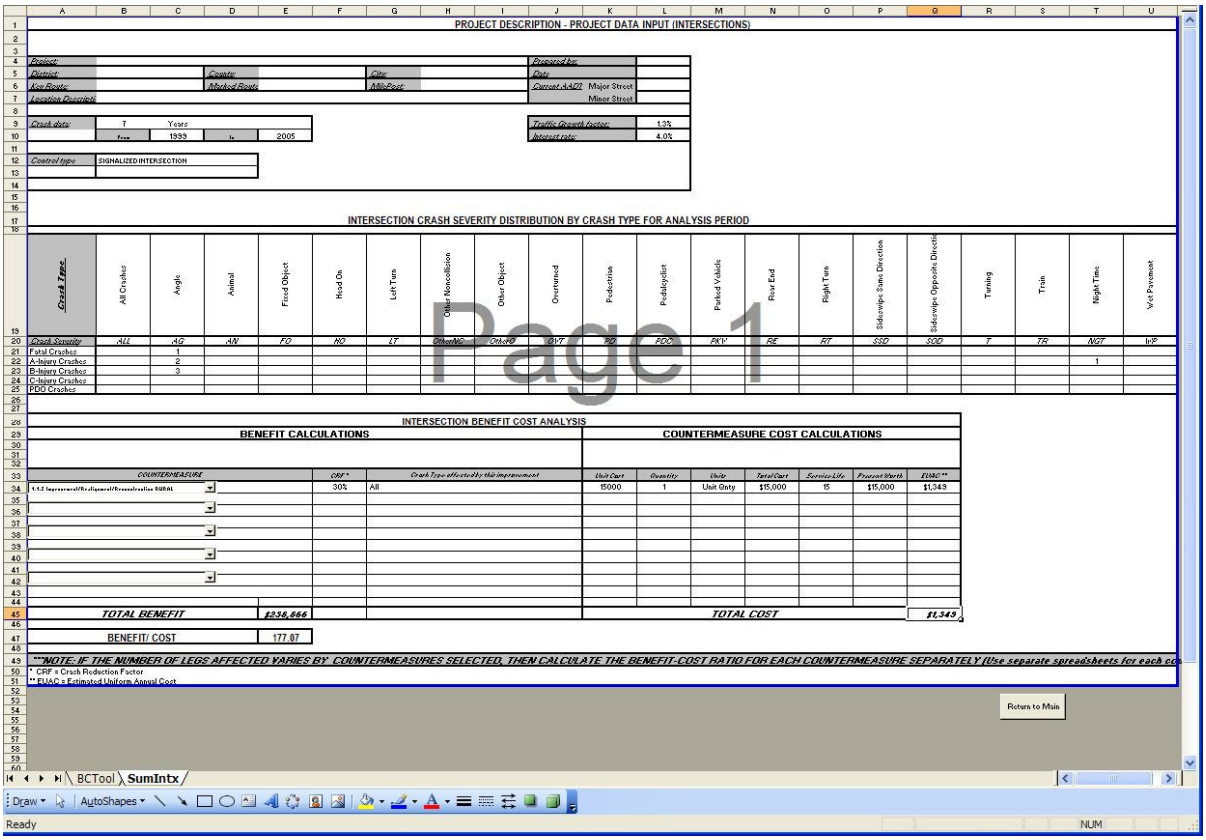
STEP 20: Click on the **Calculate B/C** button to obtain the benefit-cost ratio.

The image above will appear with the benefit /cost ratio for this project.

If you would like to test different countermeasure scenarios, you can go back to the **Input Data** tab, modify the input and re-run calculation of the B/C. This can be run as many times as desired to obtain the most favorable B/C ratio.

If you would like to erase and re-enter the crash data, select **Clean All Sheets**. The prompt will ask **Are you sure?** before deleting the information.

Select **Summary Table** to see a summary of the analysis or to verify inputs.



The above window will appear when "Summary Table" is selected.

If you would like to save the run, select **Export Data.** This will allow you to save the file with a new name. The file can be opened at a later date and modified if necessary.

3.0 Special Cases - Partial Application of Countermeasures

One may wish to consider applying a safety-based countermeasure to part but not all of a segment or intersection. For example, left turn lanes may be contemplated for one roadway but not the crossing facility at an intersection. Should this be the case, the analyst must take care to properly estimate expected benefits and calculate an appropriate B/C ratio.

Proper use of the tool for such cases requires the analyst perform the benefit calculation taking into account the specific countermeasure application. This means calculating benefits separately for each approach or segment, applying only those countermeasures that apply to that approach, and applying them only to the crashes associated with that approach or segment. The following procedure is suggested:

STEP ONE: Determine which countermeasures apply to each intersection approach or segment

STEP TWO: Identify or designate which crashes are associated with each segment (best practices would be to refer to a crash diagram), inputting only those crashes into the worksheet that apply to that segment

STEP THREE: Perform the procedure as outline in this manual, calculating total benefits and costs for each unique segment and approach. Take care to label the input as 'approach A' or 'segment B', etc.

STEP FOUR: Sum all benefits and all costs from each approach calculation, and calculate a single overall project B/C.

This procedure can apply where multiple countermeasures are being studied. For example, one countermeasure may apply to the entire segment but the second to only part or parts of the study area. Use the tool to compute benefits for each unique segment, identifying the proper countermeasures for each one.

Care should be taken in designating crashes to not 'double count' or apply any one crash or crash type to multiple segments. Similarly, costs by segment should be carefully assigned to avoid double counting.

Note that the tool output will provide a B/C ratio for each approach. This *should not be used* (i.e., it is not correct to 'average' the segment B/C ratios); rather only the costs and benefits provided in the output should be used to compute *one overall B/C ratio*.

4.0 Reading a Crash Report for Benefit-Cost Input Tool

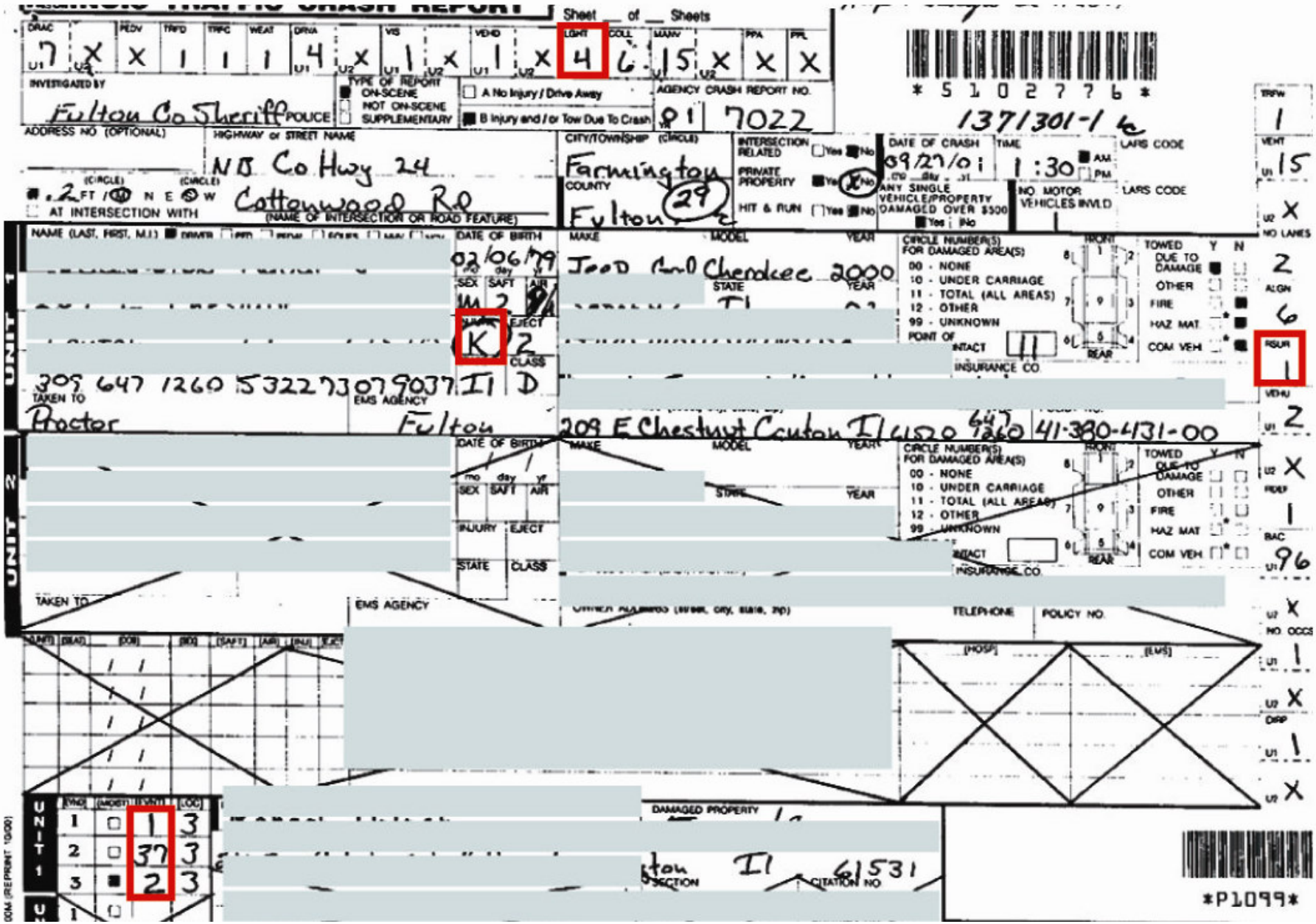
Key input factors for the countermeasure tool are crash type, crash severity, weather condition and time of day. This example indicates the area of a crash report where this information can be obtained.

Crash type – This is coded as an Event in the lower left hand corner of the report. The event coded Unit 1 and Event 1 is usually the cause of the crash. In this example the crash type is "1". Using template 1, indicates a non-collision, run off the roadway event. The event in row 3 shows a "2". Again using template 1, this indicates that after running off of the road the vehicle is overturned.

Crash severity – Injury type is coded in the middle of the crash report to the right of the description of Unit 1. In this example the injury was "K" or fatal. "A" is an incapacitating injury, "B" is a noncapacitating injury, "C" is reported, but not evident, and "0" is no indication of injury. If there are multiple vehicles involved in the crash use the most severe injury type to describe the crash severity.

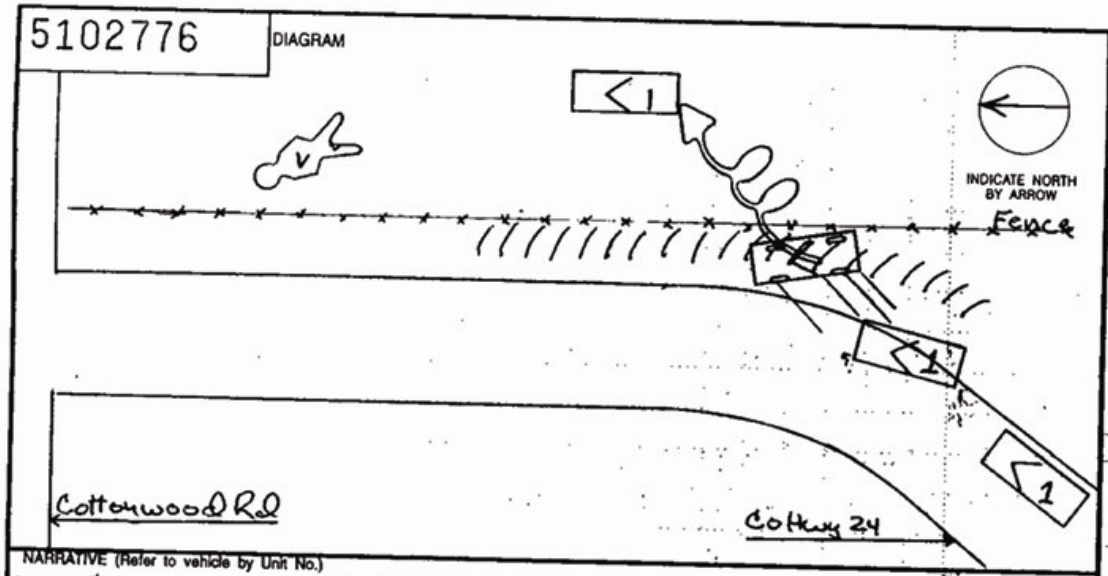
Weather condition – To determine if the pavement was wet during this crash refer to the column on the right of the report. The sixth entry from the top is labeled "RSUR" and reflects the roadway surface condition. In this example a "1" refers to dry pavement.

Night time crashes – To determine if this crash occurred at night, refer to the top line sixth box from the left labeled "LGHT". This refers to the lighting condition. For this example "4" indicates "darkness". Therefore, night time crashes should be selected.


Sheet __ of __ Sheets
* 5 1 0 2 7 7 6 *
1371301-1
Fulton Co Sheriff POLICE
A No Injury / Drive Away
B Injury and / or Tow Due To Crash
AGENCY CRASH REPORT NO.
91 7022
NB Co Hwy 24
Cottonwood Rd
Farmington
Fulton
09/27/01
1:30
UNIT 1
UNIT 2
02/06/79
Jeep Cherokee 2000
309 647 1260 532273079037 IL D
Proctor
Fulton
209 E Chestnut Canton IL 61520 647 1260 41-380-4131-00
DAMAGED PROPERTY
61531
P1099

5102776

DIAGRAM



NARRATIVE (Refer to vehicle by Unit No.)

Unit #1 was NB on Cottage 24, .2 mi S. of Cottonwood Rd at this point Unit #1 left the roadway to the East. Unit #1 was skidding broadside and struck the embankment. Upon impact Unit #1 became airborne continuing E. into a soybean field. Unit #1 rolled over approx. 3 times. Unit #1 Driver was ejected from Unit #1 and was Found approx 100' from Unit #1 to the North

COMMERCIAL VEHICLE UNIT NO.

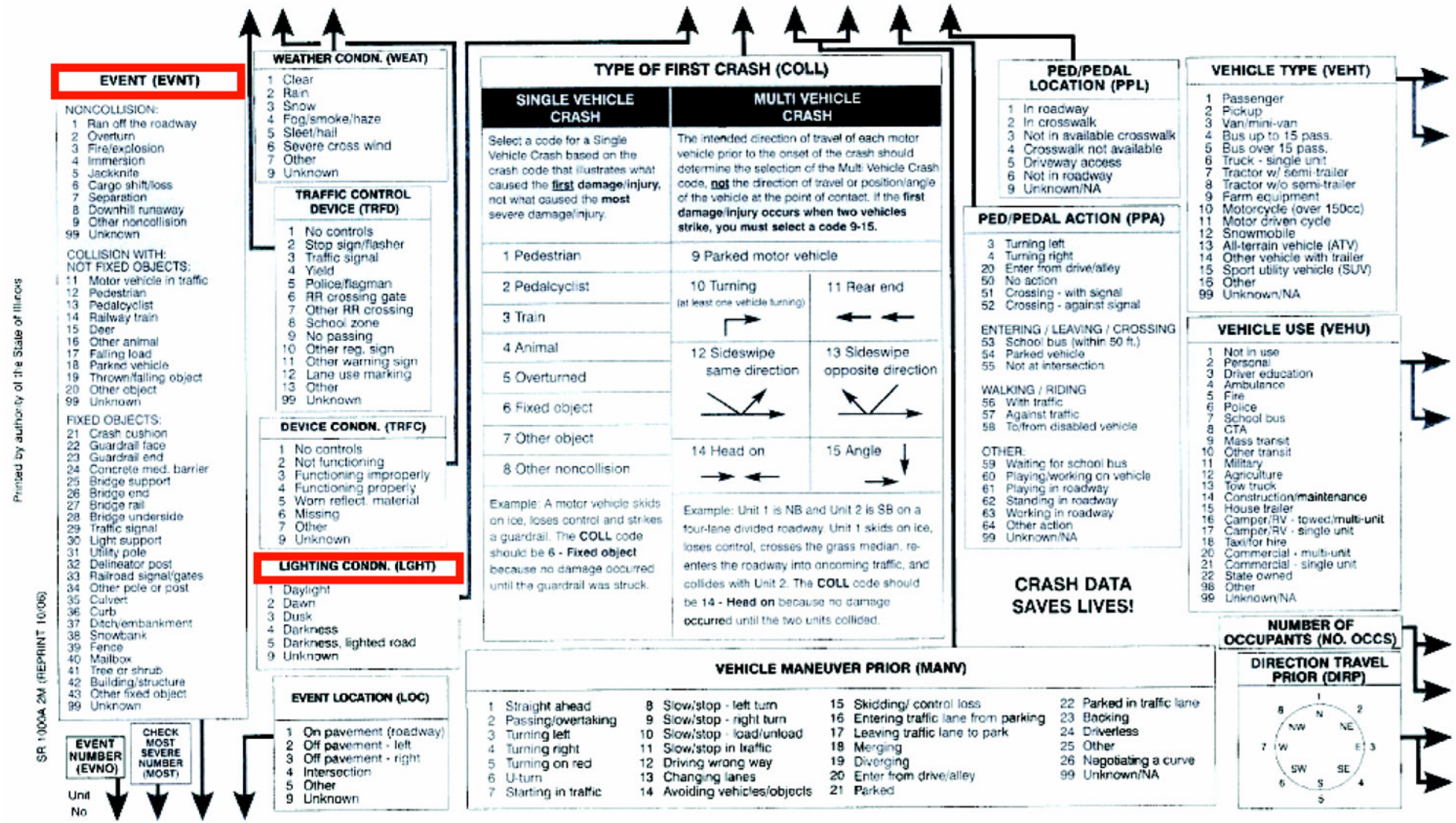
CARRIER NAME
ADDRESS
CITY STATE ZIP
SOURCE: ☐ Side of truck ☐ Papers ☐ Driver ☐ Log book
ID NUMBER GVWR
US DOT or State No. ICCMC State Name ☐ None
HAZARDOUS MATERIALS: PLACARDED? ☐ Yes ☐ No
If Yes: 4-Digits - 1-Digit or Name
Hazardous cargo released from truck? (do not count fuel from vehicle fuel tank) Y N Unk
Violation of HAZMAT regs. contribute to crash? ☐ ☐ ☐
Violation of MCS regs. contribute to crash? ☐ ☐ ☐
Inspection form completed? Y N Unk
- HAZMAT ☐ ☐ ☐ Out of Service? Y N
- MCS ☐ ☐ ☐ Out of Service? ☐ ☐
Form No.
IDOT PERMIT # WIDE LOAD Y N
TRAILER WIDTH(S) 0-96" 97-102" Over 102"
Trailer 1 ☐ ☐ ☐
Trailer 2 ☐ ☐ ☐
TRAILER LENGTH(S) - ft
Trailer 1
Trailer 2
VEHICLE LENGTH (TOTAL) - ft
NO. OF AXLES
☐ IN CITY OF / ☐ NEAREST CITY: Miles (Circle) N E S W of:
INSERT APPLICABLE NUMBERS FROM CHOICES ON BACK OF TEMPLATE TWO
VEHICLE CONFIGURATION CARGO BODY TYPE LOAD TYPE

COMMERCIAL VEHICLE UNIT NO.

CARRIER NAME
ADDRESS
CITY STATE ZIP
SOURCE: ☐ Side of truck ☐ Papers ☐ Driver ☐ Log book
ID NUMBER GVWR
US DOT or State No. ICCMC State Name ☐ None
HAZARDOUS MATERIALS: PLACARDED? ☐ Yes ☐ No
If Yes: 4-Digits 1-Digit or Name
Hazardous cargo released from truck? (do not count fuel from vehicle fuel tank) Y N Unk
Violation of HAZMAT regs. contribute to crash? ☐ ☐ ☐
Violation of MCS regs. contribute to crash? ☐ ☐ ☐
Inspection form completed? Y N Unk
- HAZMAT ☐ ☐ ☐ Out of Service? Y N
- MCS ☐ ☐ ☐ Out of Service? ☐ ☐
Form No.
IDOT PERMIT # WIDE LOAD Y N
TRAILER WIDTH(S) 0-96" 97-102" Over 102"
Trailer 1 ☐ ☐ ☐
Trailer 2 ☐ ☐ ☐
TRAILER LENGTH(S) - ft
Trailer 1
Trailer 2
VEHICLE LENGTH (TOTAL) - ft
NO. OF AXLES
☐ IN CITY OF / ☐ NEAREST CITY: Miles (Circle) N E S W of:
INSERT APPLICABLE NUMBERS FROM CHOICES ON BACK OF TEMPLATE TWO
VEHICLE CONFIGURATION CARGO BODY TYPE LOAD TYPE

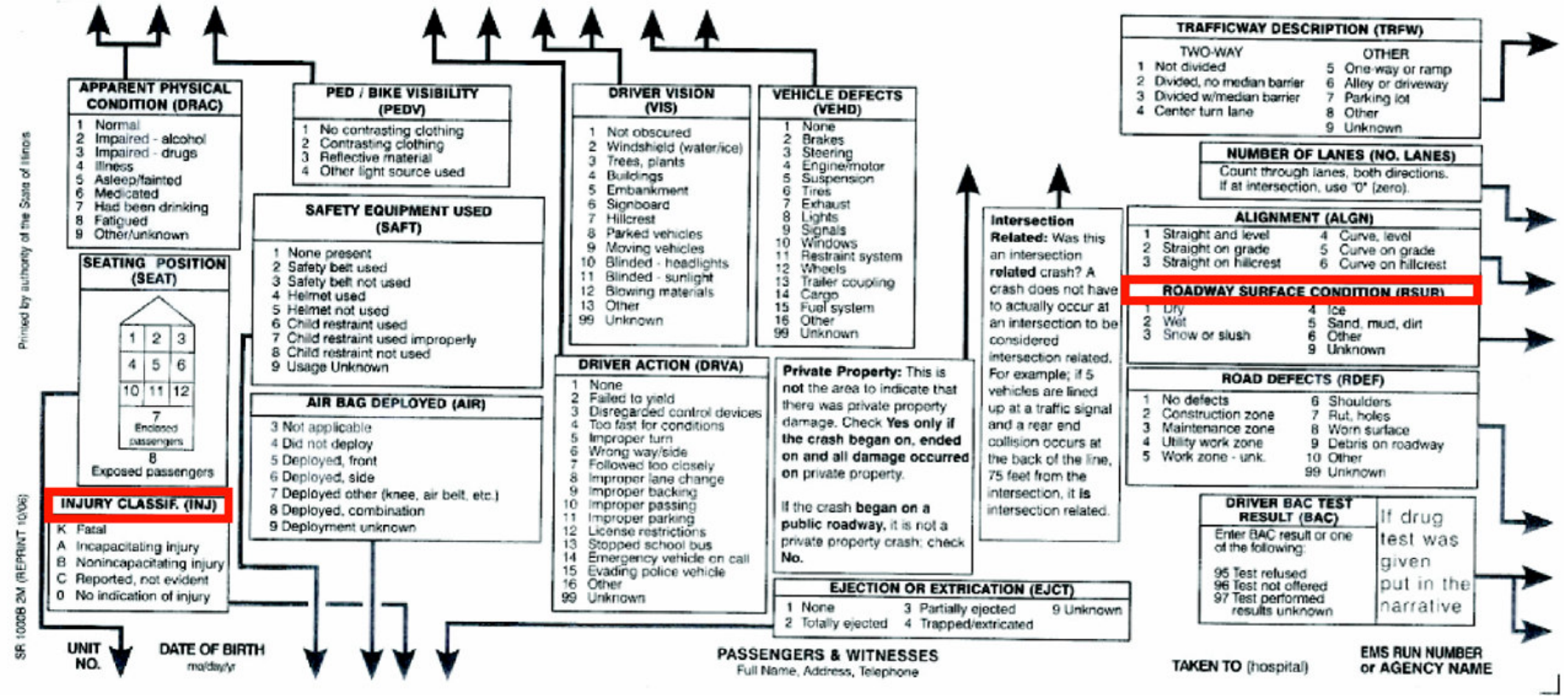
ILLINOIS TRAFFIC CRASH REPORT

TEMPLATE 1



ILLINOIS TRAFFIC CRASH REPORT

TEMPLATE 2



5.0 Examples

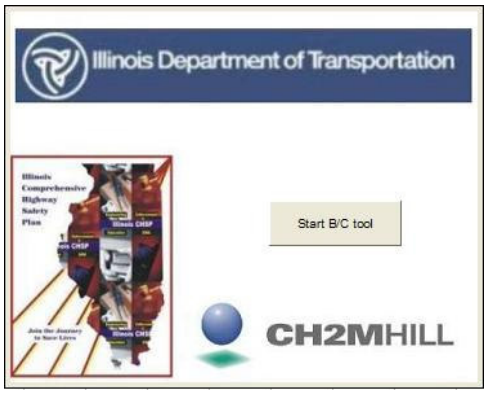
5.1 Case Study 1: Benefit Cost Analysis for a Segment.

The roadway segment along IL 0 between Maple Street and Oak Street was identified as a hazardous location. It is located in District 10, Wooded County, in the Village of Forest. From 2001 to 2005 there were 3 fatal crashes, 6 A-injury crashes, and 10 B-injury crashes. There were also C- injury and property damage only crashes at this location, but the exact number is not needed for the analysis. There are 3 night time crashes, 1 A-injury and 2 B-injury. A majority of the crashes were fixed object and overturn. The current AADT is 9500.

Countermeasures were reviewed and benefit-cost calculations were conducted to select the recommended solution. This example reflects the step-by-step procedure for calculating the benefit-cost ratio for adding rumble strips to the existing shoulder.

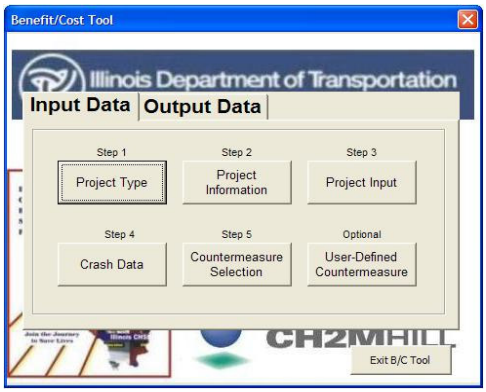
Step-by-Step Procedures

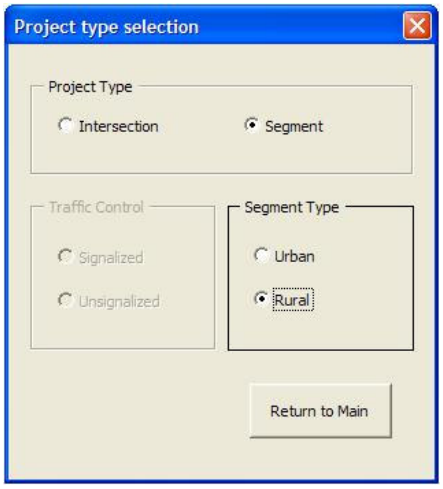
STEP 1: Start by pressing the **Start B/C Tool** button.



STEP 2: Select the **Input Data** tab.

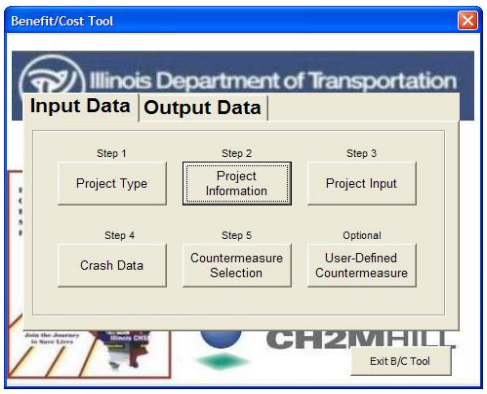
STEP 3: Select the button labeled **Project Type**



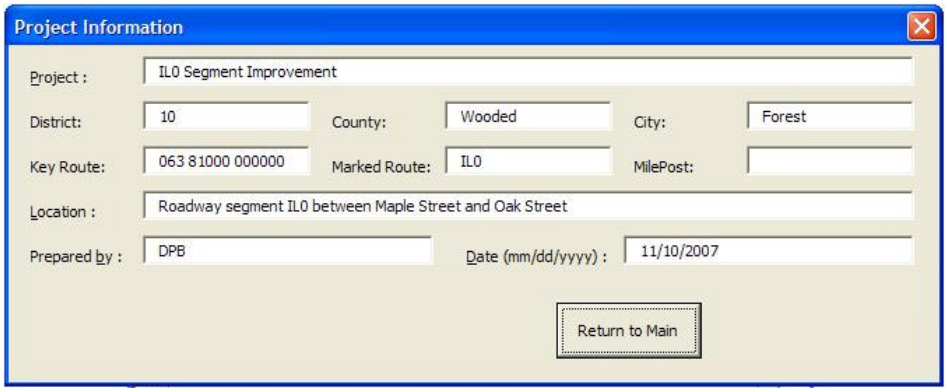


STEP 4: Select project type by clicking on the circle next to **Segment.** Select **Rural** under Segment Type.

When complete click on the **Return to Main** button to return to the main input window.

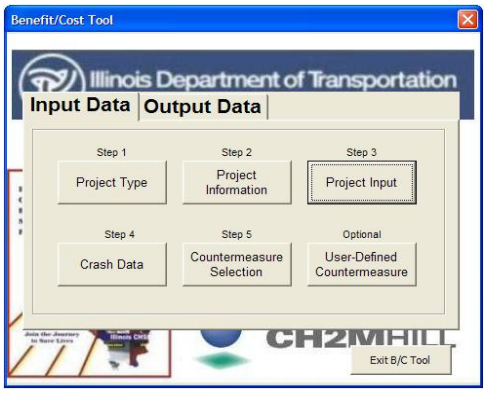


STEP 5: On the main menu, select the button labeled **Project Information**.

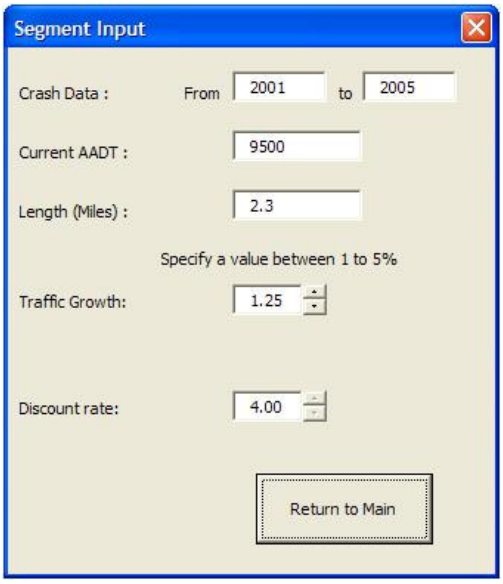


STEP 6: Complete the information in the boxes as shown. When all fields have been completed, click on **Return to Main**.

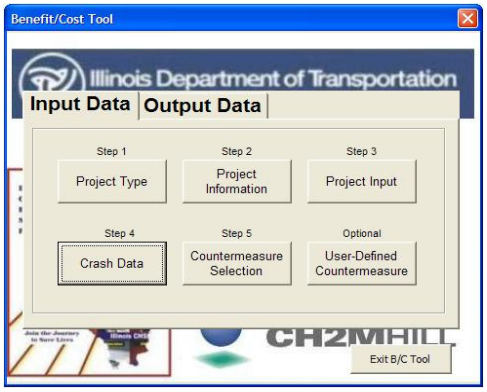
STEP 7: Select the button labeled **Project Input**.

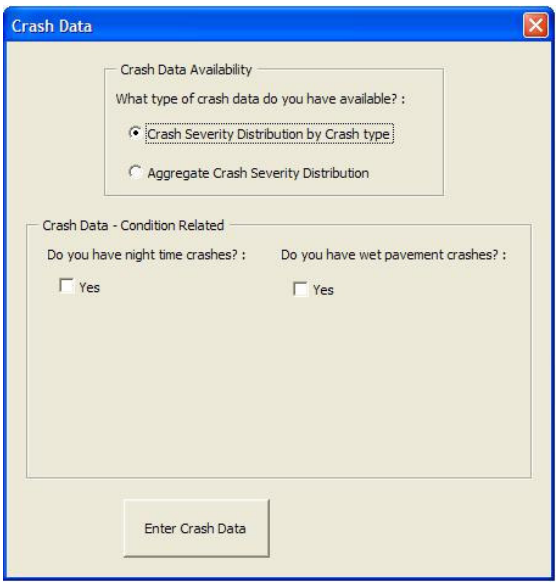


STEP 8: Input the information requested in the fields of the **Segment Input** window. When complete with all fields click on **Return to Main**.



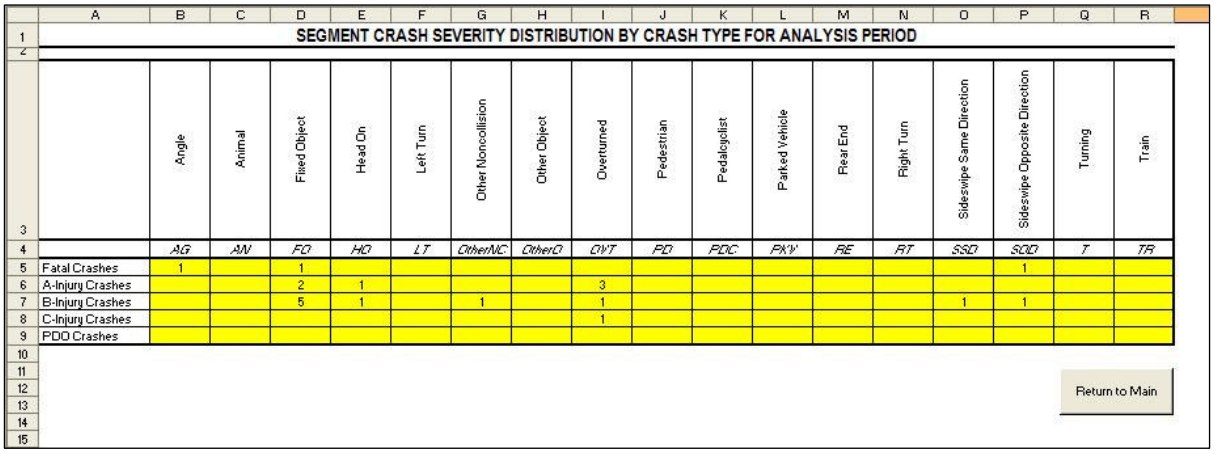
STEP 9: Select the button labeled **Crash Data**.





STEP 10: Select **Crash Severity Distribution by Crash Type** by clicking on the circle next to the text. When complete, select the **Enter Crash Data** button.

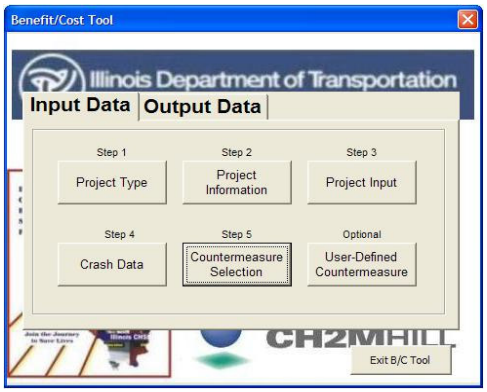
STEP 11: Enter the crash data for the analysis period by crash type and severity as shown. When complete, select the **Return to Main** button



SEGMENT CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

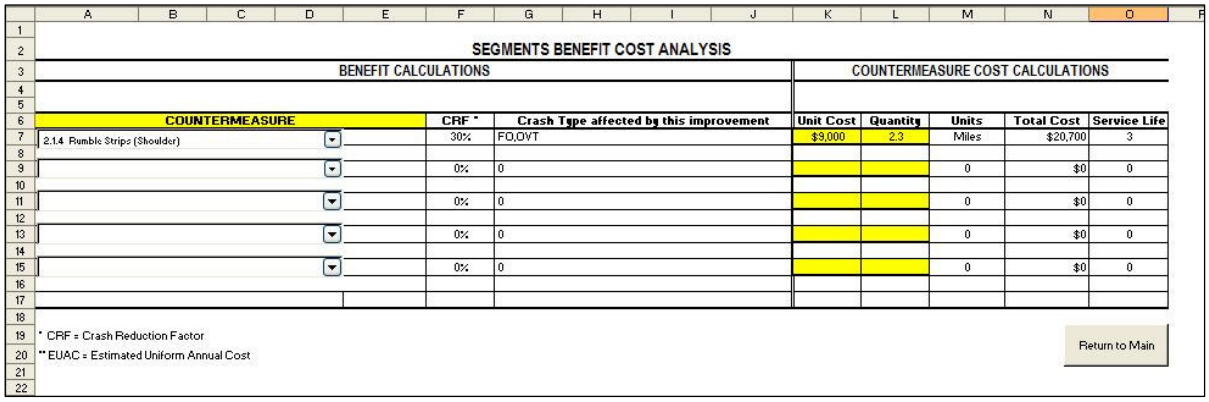
	Angle	Animal	Fixed Object	Head On	Left Turn	Other Noncollision	Other Object	Overturned	Pedestrian	Pedalcyclist	Parked Vehicle	Rear End	Right Turn	Sideswipe Same Direction	Sideswipe Opposite Direction	Turning	Train
	AG	AN	FO	HO	LT	OtherNC	OtherO	OVT	PD	PDC	PKV	RE	RT	SSD	SOD	T	TR
Fatal Crashes	1		1												1		
A-Injury Crashes			2	1				3									
B-Injury Crashes			5	1		1		1						1	1		
C-Injury Crashes								1									
PDO Crashes																	

Return to Main



STEP 12: Select the button labeled **Countermeasure Selection**.

STEP 13: Select 2.1.4 Rumble Strips (Shoulder) from the countermeasure dropdown menu.



SEGMENTS BENEFIT COST ANALYSIS

BENEFIT CALCULATIONS			COUNTERMEASURE COST CALCULATIONS				
COUNTERMEASURE	CRF *	Crash Type affected by this improvement	Unit Cost	Quantity	Units	Total Cost	Service Life
2.1.4 Rumble Strips (Shoulder)	30%	FO,OVT	$9,000	2.3	Miles	$20,700	3
	0%	0			0	$0	0
	0%	0			0	$0	0
	0%	0			0	$0	0
	0%	0			0	$0	0

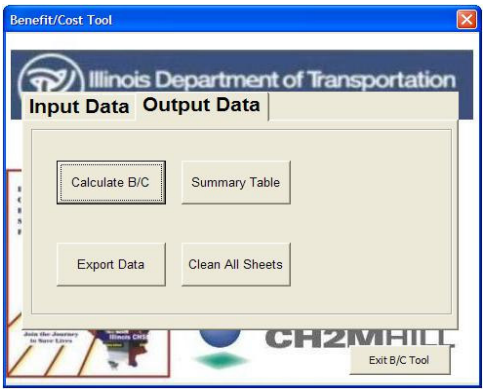
* CRF = Crash Reduction Factor
** EUAC = Estimated Uniform Annual Cost

Return to Main

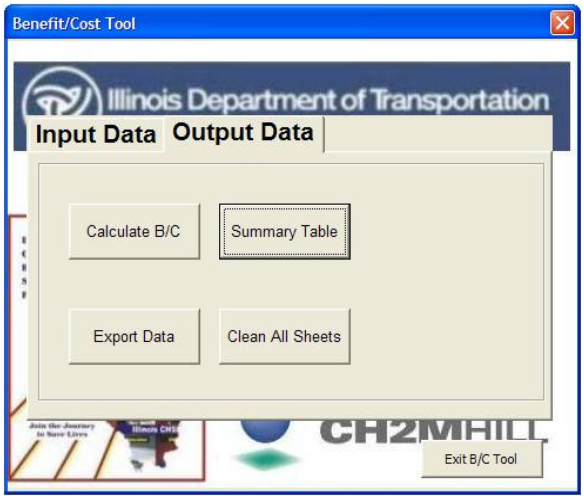
STEP 14: Enter the **Unit Cost** and **Quantity** for the selected countermeasure. When complete, select **Return to Main.**

When all input data has been completed, select the **Output Data** tab on the main menu and the screen shown below will appear.

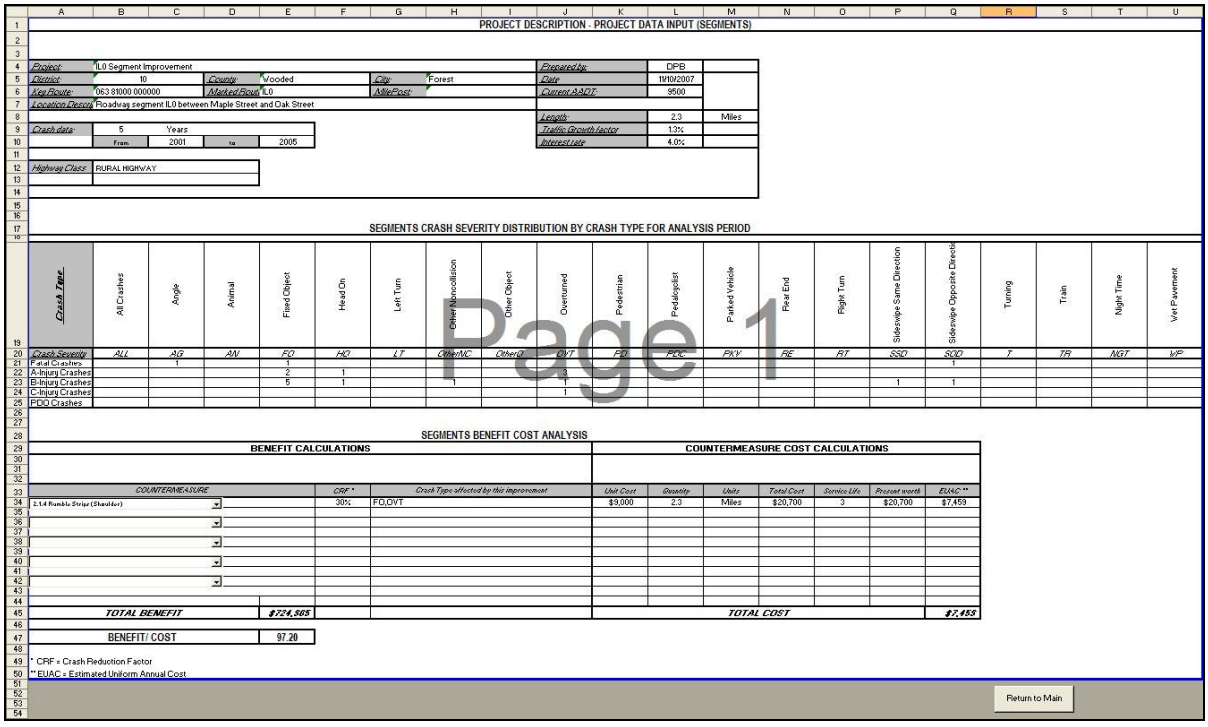
STEP 15: Click on the **Calculate B/C** button to obtain the benefit-cost ratio.



The image to the right will appear with the benefit /cost ratio for this project. Click the **OK** button to return to the main menu.



STEP 16: Select **Summary Table** to see a summary of the analysis or to verify inputs.



The above window will appear when "Summary Table" is selected.

If you would like to save the run, select **Export Data.** This will allow you to save the file with a new name. The file can be opened at a later date and modified if necessary.

5.2 Case Study 2: Benefit Cost Analysis for a Signalized Intersection.

The signalized intersection of Maple Street and Oak Street was identified as a hazardous location. It is located in District 0, Wooded County, in the Village of Forest. From 2001 to 2005 there was 2 fatal crash, 38 A-injury crashes, and 63 B-injury crashes. There were also C-injury and property damage only crashes at this location. A majority of the crashes were angle and turning with turning representing the most severe crash type.

A road safety assessment was conducted and it was determined that there was a high left turn volume from a shared thru lane. The traffic signal heads were also difficult to see from a distance.

Countermeasures were reviewed and benefit-cost calculations were conducted to select the recommended solution. This example reflects the step-by-step procedure for calculating the benefit-cost ratio for adding two countermeasures; an increase in the signal lens size to 12 inches for the entire intersection and a left turn lane with a left turn phase for two legs of the intersection. For this example the benefit-cost is calculated twice because intersection legs are being treated differently. After tool calculations are made, an external calculation must be made to obtain a final composite benefit-cost ratio.

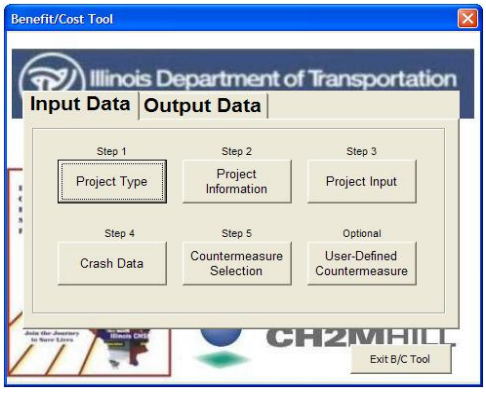
In this example, the first b/c calculation will be for treatment of two legs of the intersection with the increase in signal lens size. The second calculation will be for treatment of the other two legs of the intersection with an increase in signal lens size and the addition of left turn lanes.

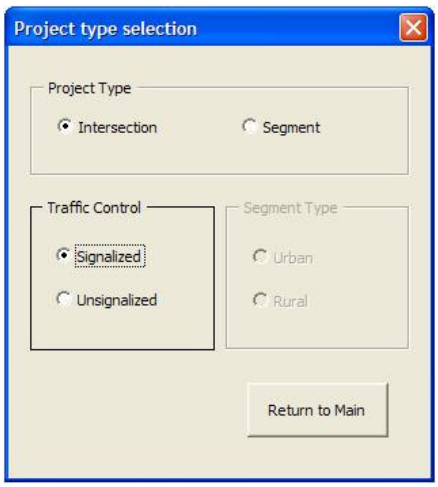
Step-by-Step Procedures

STEP 1: Start by pressing the **Start B/C Tool** button.

STEP 2: Select the **Input Data** tab.

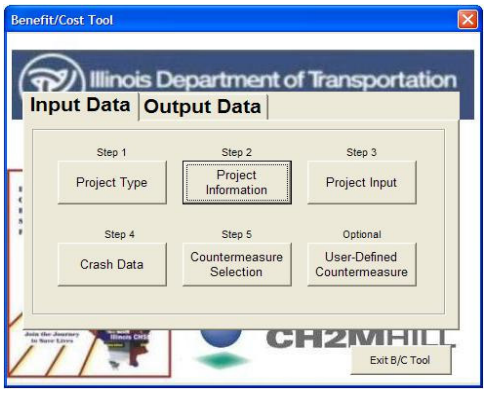
STEP 3: Select the button labeled **Project Type**





STEP 4: Select project type by clicking on the circle next to **Intersection** then select **Signalized.**

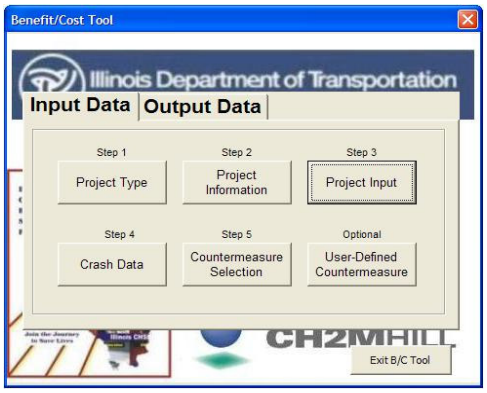
When complete click on the **Return to Main** button to return to the main input window.



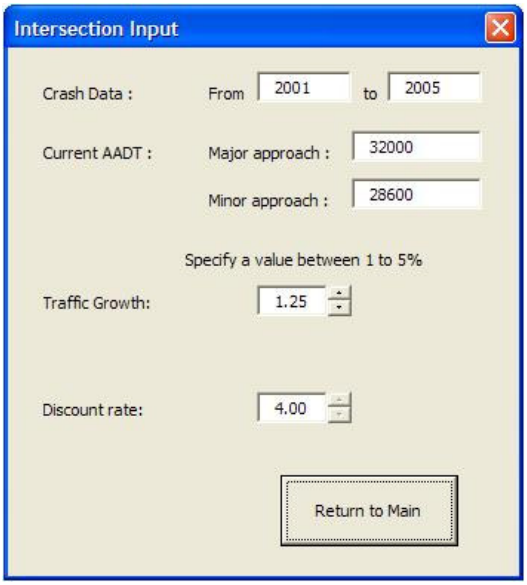
STEP 5: On the main menu, select the button labeled **Project Information**.

STEP 6: Complete the information in the boxes as shown. When all fields have been completed, click on **Return to Main**.

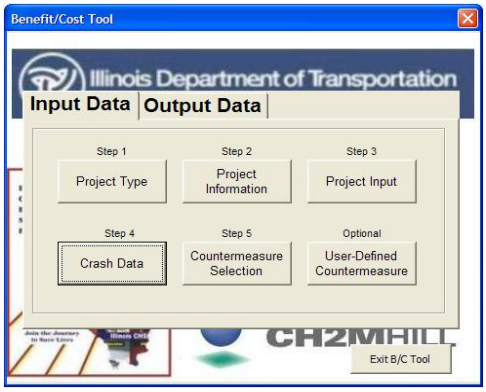
STEP 7: Select the button labeled **Project Input**.

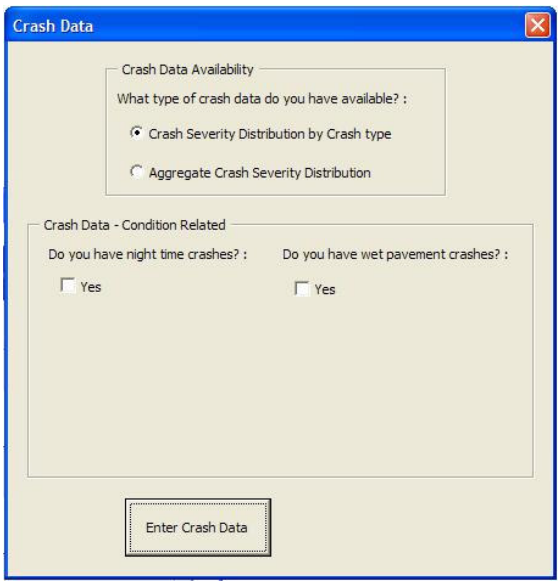


STEP 8: Input the information requested in the fields of the **Intersection Input** window. When complete with all fields click on **Return to Main**.



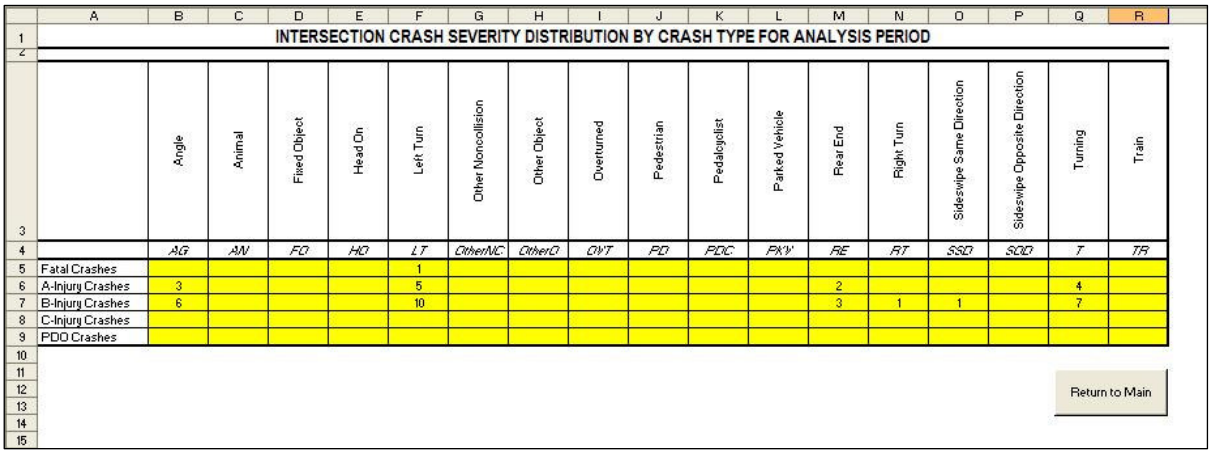
STEP 9: Select the button labeled **Crash Data**.





STEP 10: Select **Crash Severity Distribution by Crash Type** by clicking on the circle next to the text. When complete, select the **Enter Crash Data** button

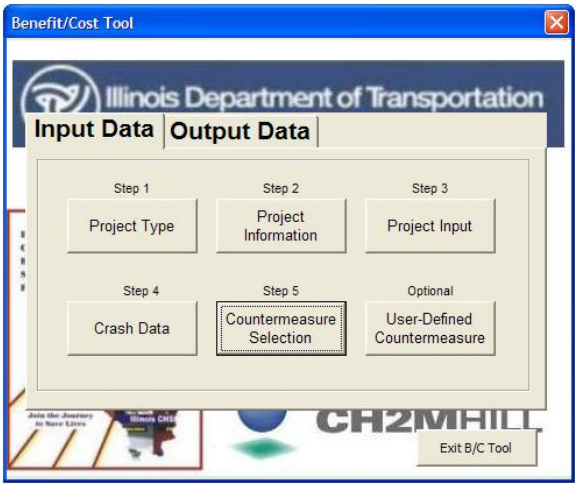
STEP 11: Enter the crash data for the analysis period by crash type and severity as shown. Crash data entered should only be for the two legs of the intersection that are going to be treated with increasing the lens size. When complete, select the **Return to Main** button



INTERSECTION CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

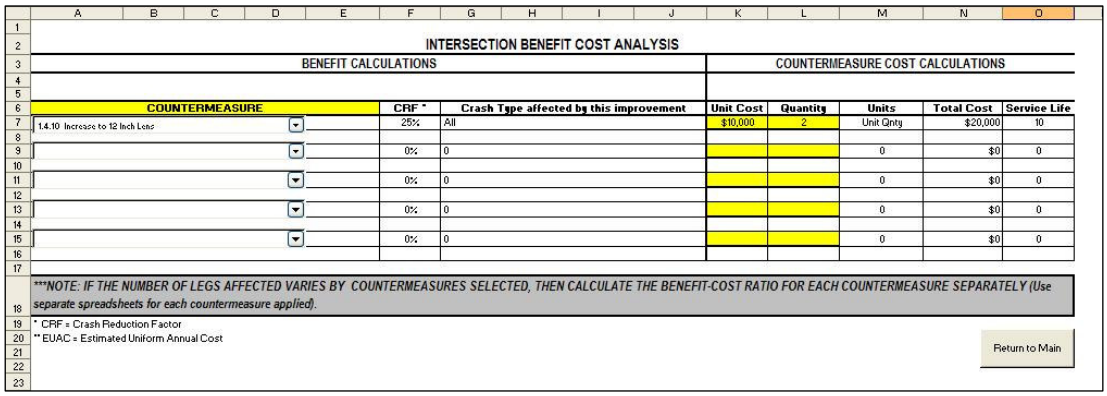
	Angle	Animal	Fixed Object	Head On	Left Turn	Other Noncollision	Other Object	Overturned	Pedestrian	Pedalcyclist	Parked Vehicle	Rear End	Right Turn	Sideswipe Same Direction	Sideswipe Opposite Direction	Turning	Train
	AG	AN	FO	HO	LT	OthrNC	OthrO	OVT	PD	PDC	PKV	RE	RT	SSD	SOD	T	TR
Fatal Crashes					1												
A-Injury Crashes	3				5							2				4	
B-Injury Crashes	6				10							3	1	1		7	
C-Injury Crashes																	
PDO Crashes																	

Return to Main



STEP 12: Select the button labeled **Countermeasure Selection**

STEP 13: Select 1.4.10 Increase to 12 Inch Lens from the countermeasure dropdown menu.



INTERSECTION BENEFIT COST ANALYSIS

BENEFIT CALCULATIONS				COUNTERMEASURE COST CALCULATIONS				
COUNTERMEASURE	CRF *	Crash Type affected by this improvement	Unit Cost	Quantity	Units	Total Cost	Service Life
1.4.10 Increase to 12 Inch Lens	25%	All	$10,000	2	Unit Qnty	$20,000	10
	0%	0			0	$0	0
	0%	0			0	$0	0
	0%	0			0	$0	0
	0%	0			0	$0	0

***NOTE: IF THE NUMBER OF LEGS AFFECTED VARIES BY COUNTERMEASURES SELECTED, THEN CALCULATE THE BENEFIT-COST RATIO FOR EACH COUNTERMEASURE SEPARATELY (Use separate spreadsheets for each countermeasure applied).

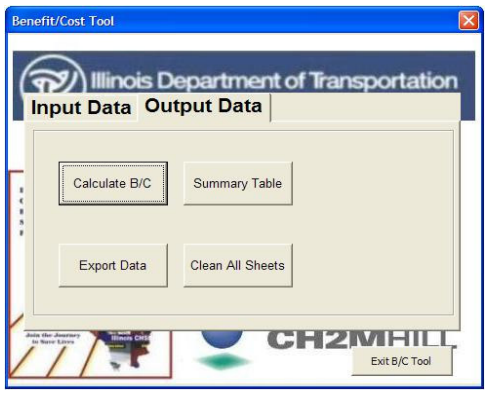
* CRF = Crash Reduction Factor
** EUAC = Estimated Uniform Annual Cost

Return to Main

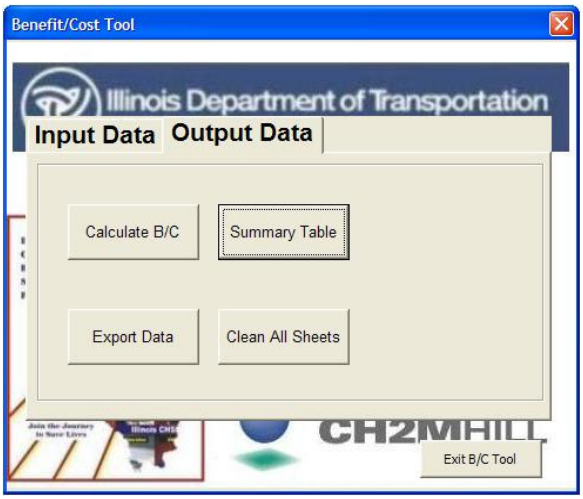
STEP 14: Enter the **Unit Cost** and **Quantity** for the selected countermeasure. The cost entered should be the cost for increasing the lens size on two legs of the intersection. When complete, select **Return to Main.**

When all input data has been completed, select the **Output Data** tab on the main menu and the screen shown below will appear.

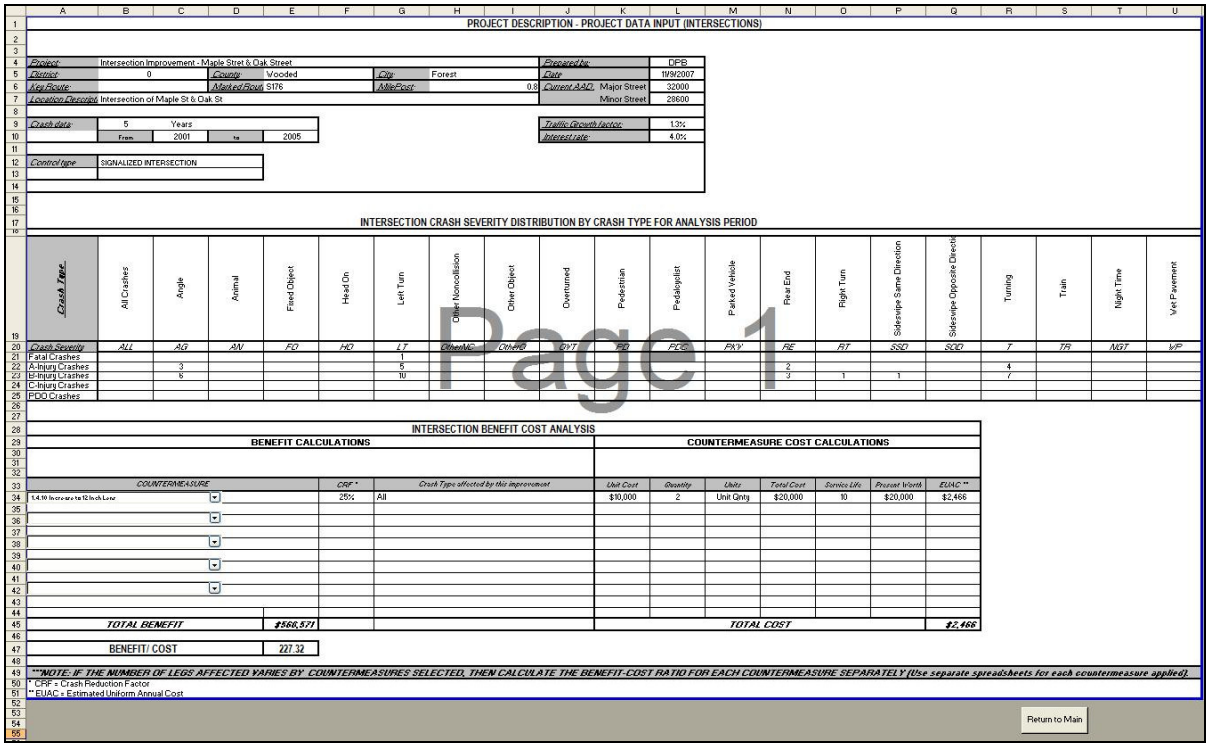
STEP 15: Click on the **Calculate B/C** button to obtain the benefit-cost ratio.



The image to the right will appear with the benefit /cost ratio for this project. Click the **OK** button to return to the main menu



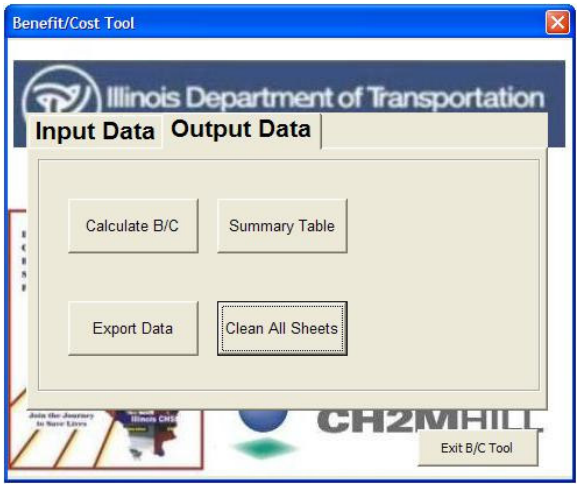
STEP 16: Select **Summary Table** to see a summary of the analysis or to verify inputs



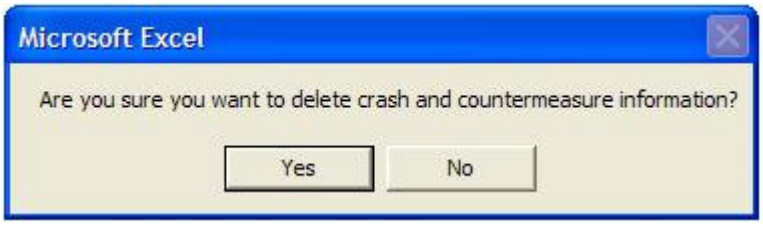
The above window will appear when “Summary Table” is selected.

The analysis for treating two legs of the intersection with increasing the lens size is complete. To treat the other two legs of the intersection with an increase in lens size and the addition of left turn lanes and left turn phases, continue with the following steps.

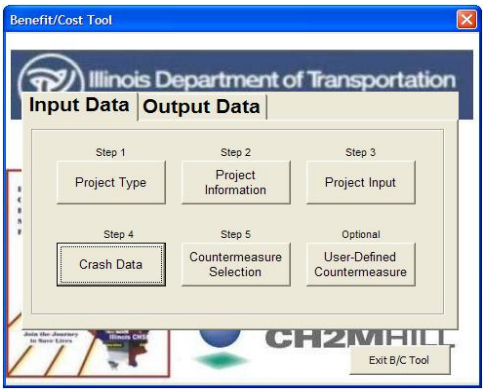
Step 17: The Project data has been already input into the menus, and the sheets. Click on the **Clean all Sheets** button to delete the input crash data to revise.

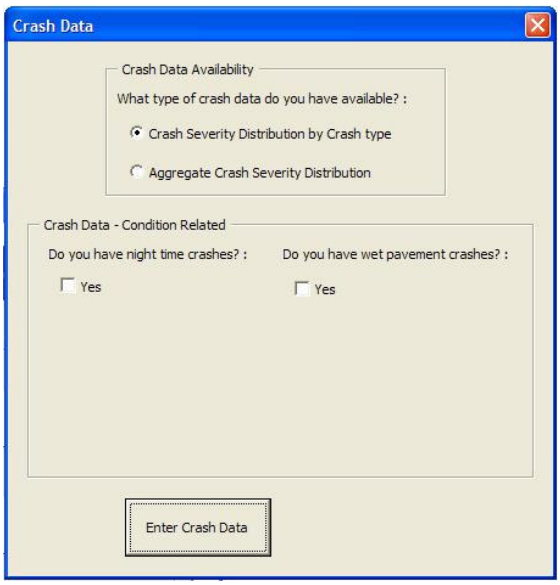


Step 18: Click **Yes** to confirm.



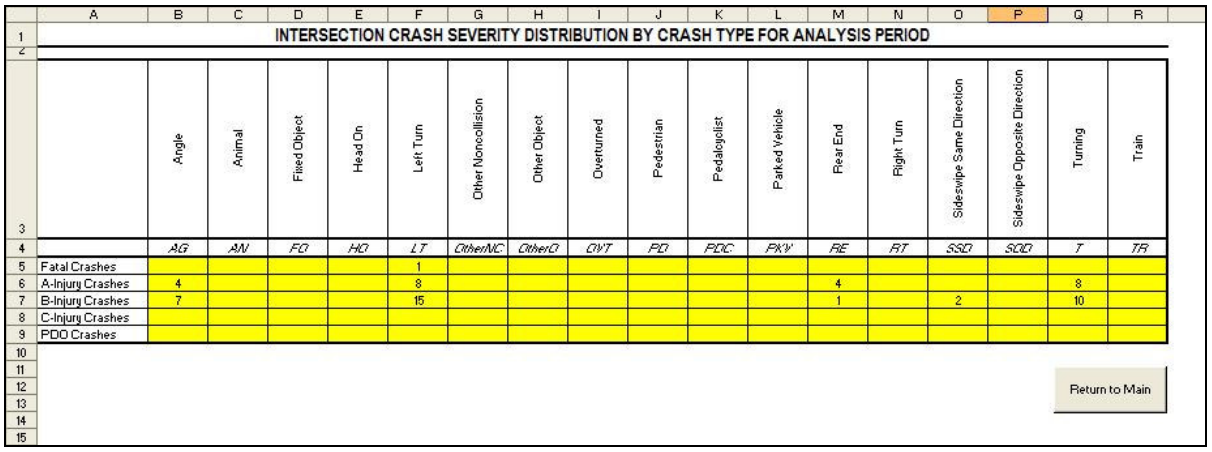
STEP 19: Select the button labeled **Crash Data**.





STEP 20: Select **Crash Severity Distribution by Crash Type** by clicking on the circle next to the text. When complete, select the **Enter Crash Data** button

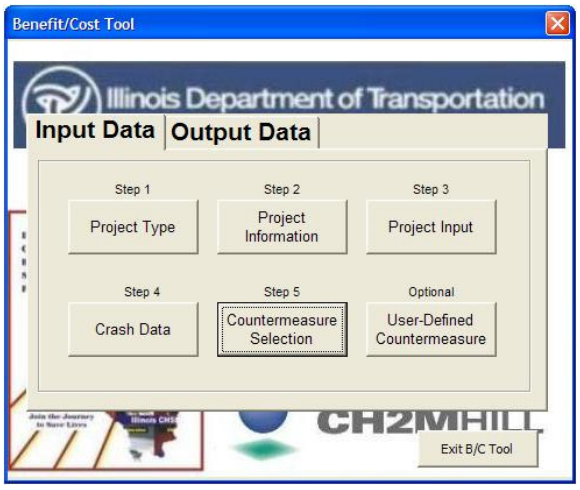
STEP 21: Enter the crash data for the analysis period by crash type and severity for the crashes on the legs of the intersection that will be treated with increasing the lens size and the addition of the left turn lanes. Crashes should appear under one of the two B/C analyses, not both so that there is not double counting of crashes. When complete, select the **Return to Main** button.



INTERSECTION CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

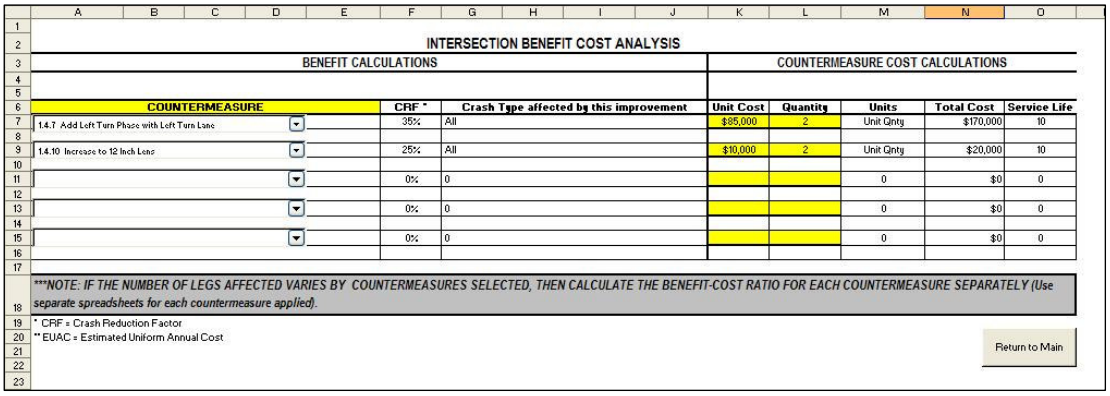
	Angle	Animal	Fixed Object	Head On	Left Turn	Other Noncollision	Other Object	Overturned	Pedestrian	Pedalcyclist	Parked Vehicle	Rear End	Right Turn	Sideswipe Same Direction	Sideswipe Opposite Direction	Turning	Train
	AG	AN	FO	HO	LT	OtherNC	OtherO	OVT	PD	PDC	PKV	RE	RT	SSD	SOD	T	TR
Fatal Crashes					1												
A-Injury Crashes	4				8							4				8	
B-Injury Crashes	7				15							1		2		10	
C-Injury Crashes																	
PDO Crashes																	

Return to Main



STEP 22: Select the button labeled **Countermeasure Selection.**

STEP 23: Select 1.4.7 Add Left Turn Phase with Left turn Lane, and 1.4.10 Increase to 12 Inch Lens from the countermeasure dropdown menu.



INTERSECTION BENEFIT COST ANALYSIS

BENEFIT CALCULATIONS			COUNTERMEASURE COST CALCULATIONS				
COUNTERMEASURE	CRF *	Crash Type affected by this improvement	Unit Cost	Quantity	Units	Total Cost	Service Life
1.4.7 Add Left Turn Phase with Left Turn Lane	35%	All	$85,000	2	Unit Qnty	$170,000	10
1.4.10 Increase to 12 Inch Lens	25%	All	$10,000	2	Unit Qnty	$20,000	10
	0%	0			0	$0	0
	0%	0			0	$0	0
	0%	0			0	$0	0

***NOTE: IF THE NUMBER OF LEGS AFFECTED VARIES BY COUNTERMEASURES SELECTED, THEN CALCULATE THE BENEFIT-COST RATIO FOR EACH COUNTERMEASURE SEPARATELY (Use separate spreadsheets for each countermeasure applied).

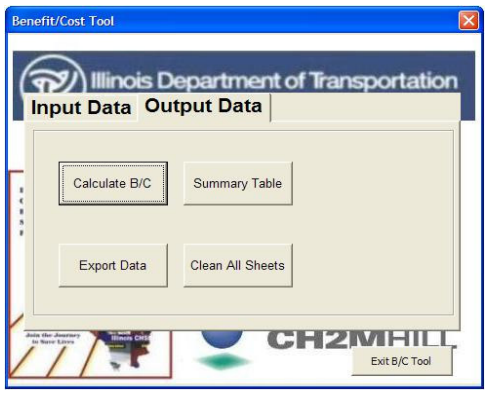
* CRF = Crash Reduction Factor
** EUAC = Estimated Uniform Annual Cost

Return to Main

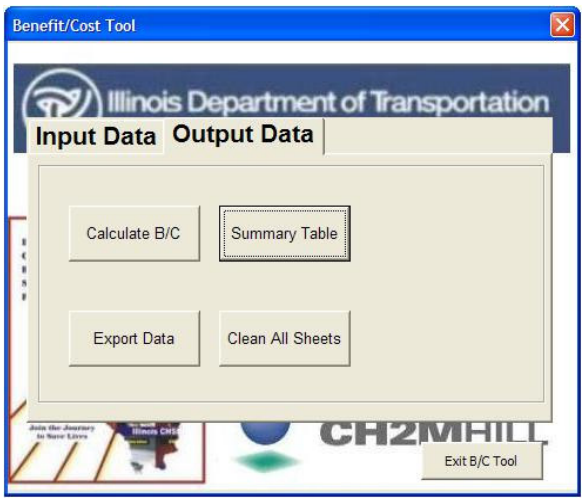
STEP 24: Enter the **Unit Cost** and **Quantity** for the selected countermeasures. When complete, select **Return to Main.**

STEP 25: When all input data has been completed, select the **Output Data** tab on the main menu and the screen shown below will appear.

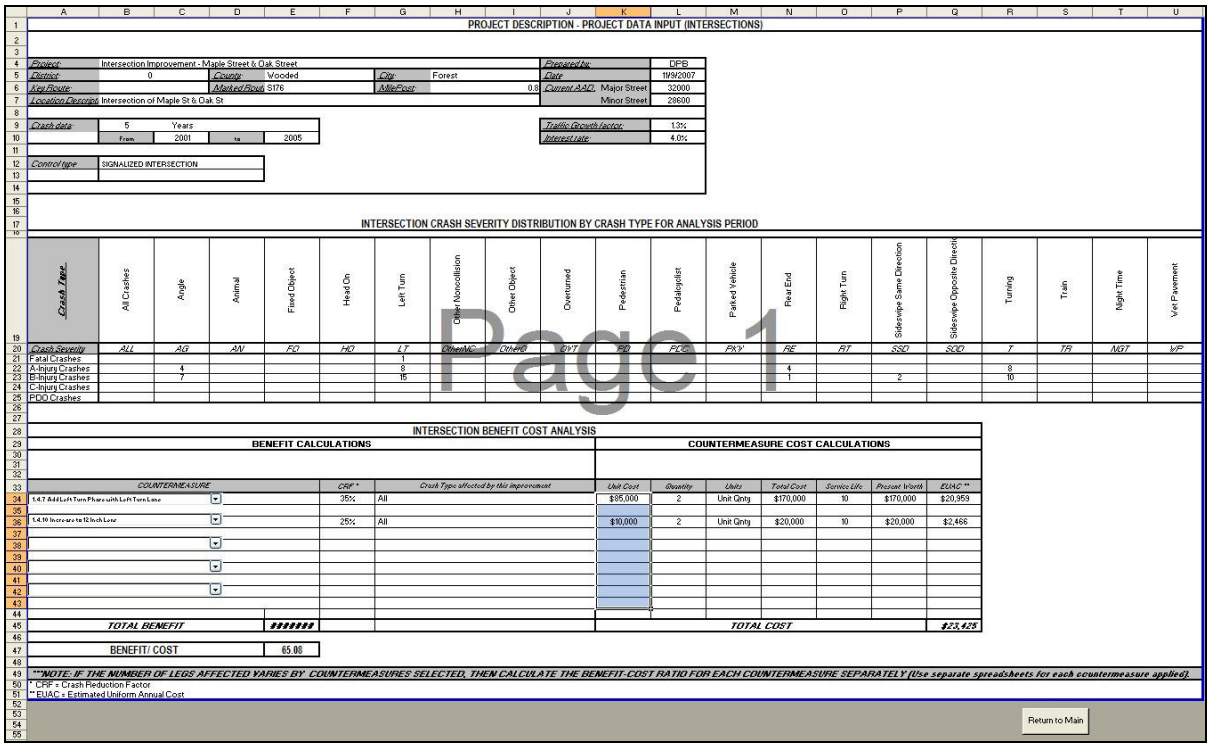
STEP 26: Click on the **Calculate B/C** button to obtain the benefit-cost ratio.



The image to the right will appear with the benefit /cost ratio for this project. Click the **OK** button to return to the main menu.



STEP 27: Select **Summary Table** to see a summary of the analysis or to verify inputs



The above window will appear when "Summary Table" is selected.

If you would like to save the run, select **Export Data.** This will allow you to save the file with a new name. The file can be opened at a later date and modified if necessary.

After completing the two benefit-cost analyses a, a combined b/c ratio can be obtained by adding the benefits and divided by the total cost. The total cost for this example is, $25,891 and the total benefit is $2,084,977.96. The composite B/C is 80.53.

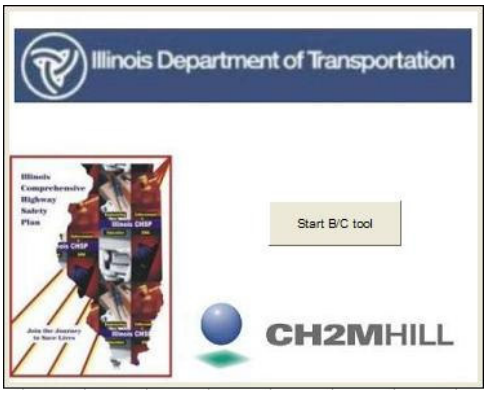
5.3 Case Study 3: Benefit Cost Analysis for a Systematic Improvement.

This case of study shows an analysis for systematic improvements at a series of locations that present similar type of risk or recurring number of crashes of certain type. The sites are located in District 10, and there are within 14 different counties' boundaries. A major crash pattern and risks at the different sites is associated with improvement and lack of warning signals.

This example reflects the step-by-step procedure for calculating the benefit-cost ratio for adding two types of warning signs and chevrons to the existing sites.

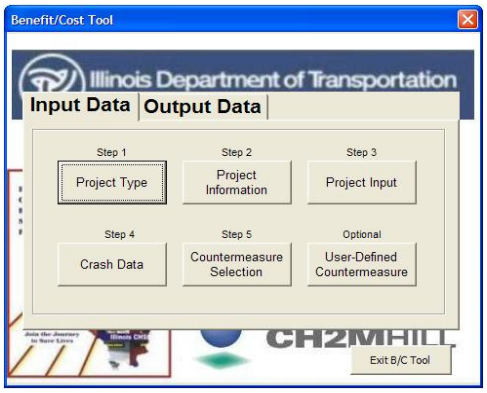
Step-by-Step Procedures

STEP 1: Start by pressing the **Start B/C Tool** button.



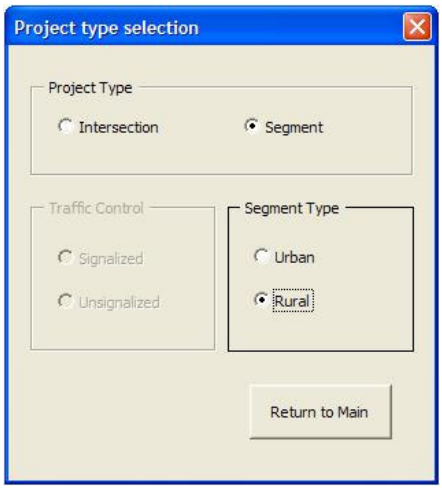
STEP 2: Select the **Input Data** tab.

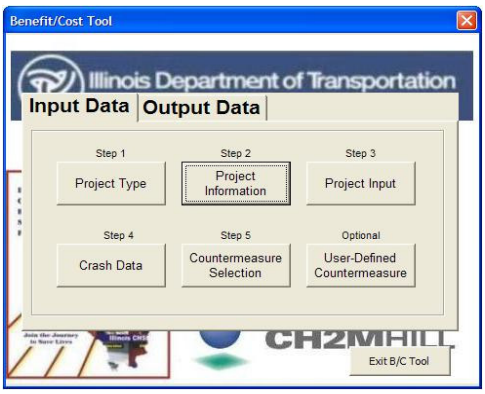
STEP 3: Select the button labeled **Project Type**



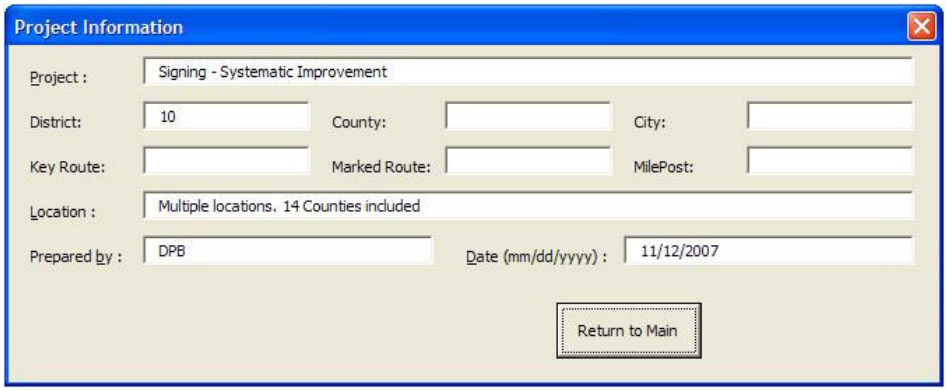
STEP 4: Select project type by clicking on the circle next to **Segment.** Select **Rural** under Segment Type.

When complete click on the **Return to Main** button to return to the main input window.



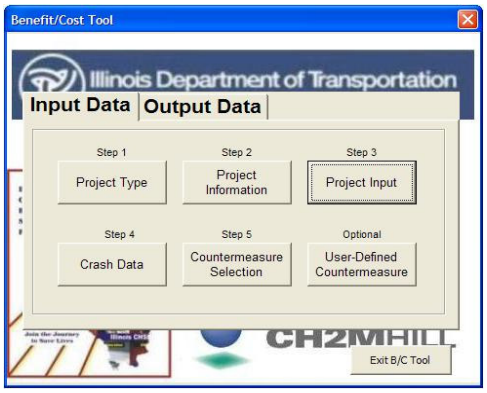


STEP 5: On the main menu, select the button labeled **Project Information**.

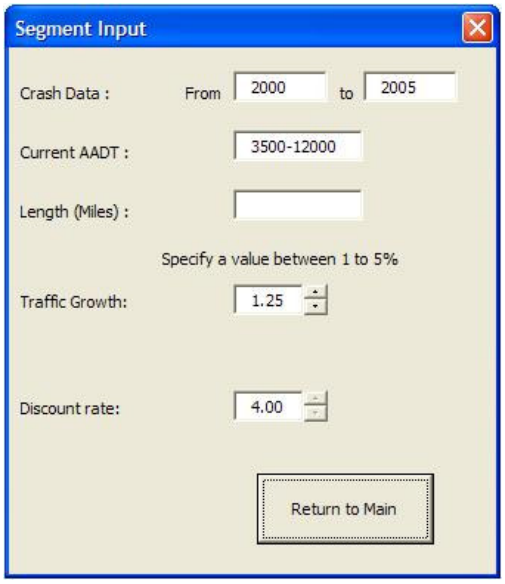


STEP 6: Complete the information in the boxes as shown. When all fields have been completed, click on **Return to Main**.

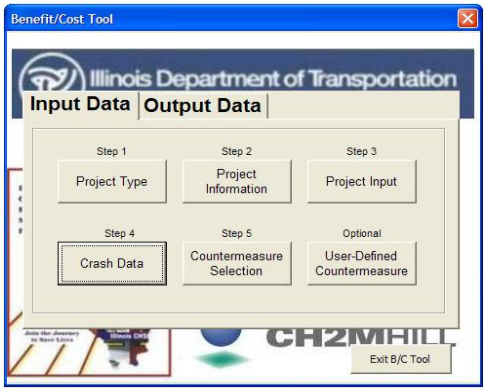
STEP 7: Select the button labeled **Project Input**.

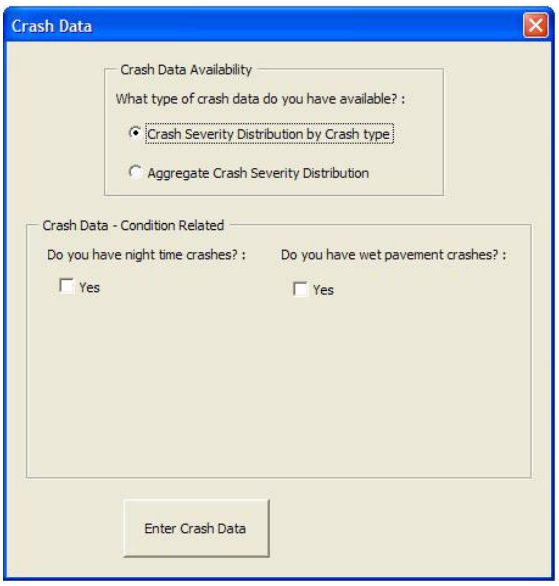


STEP 8: Input the information requested in the fields of the **Segment Input** window. When complete with all fields click on **Return to Main**.



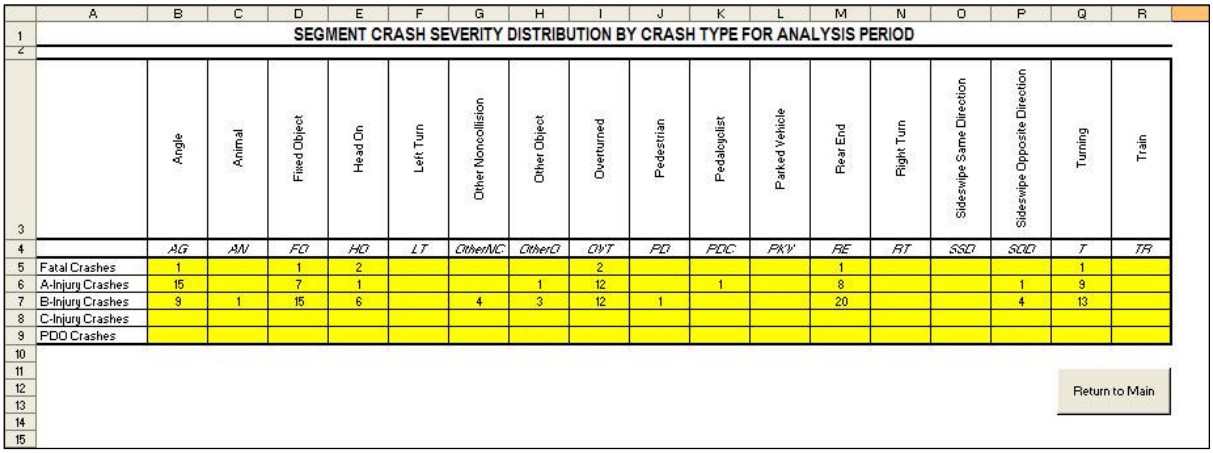
STEP 9: Select the button labeled **Crash Data**.





STEP 10: Select **Crash Severity Distribution by Crash Type** by clicking on the circle next to the text. When complete, select the **Enter Crash Data** button.

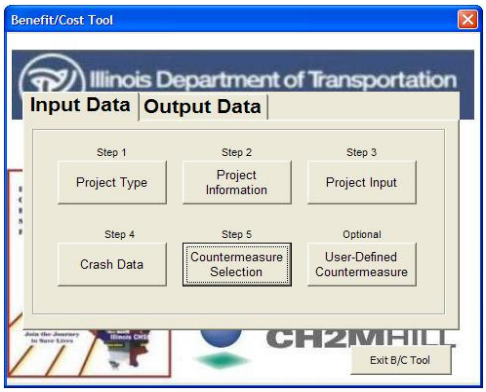
STEP 11: Enter the crash data for the analysis period by crash type and severity as shown. When complete, select the **Return to Main** button



SEGMENT CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

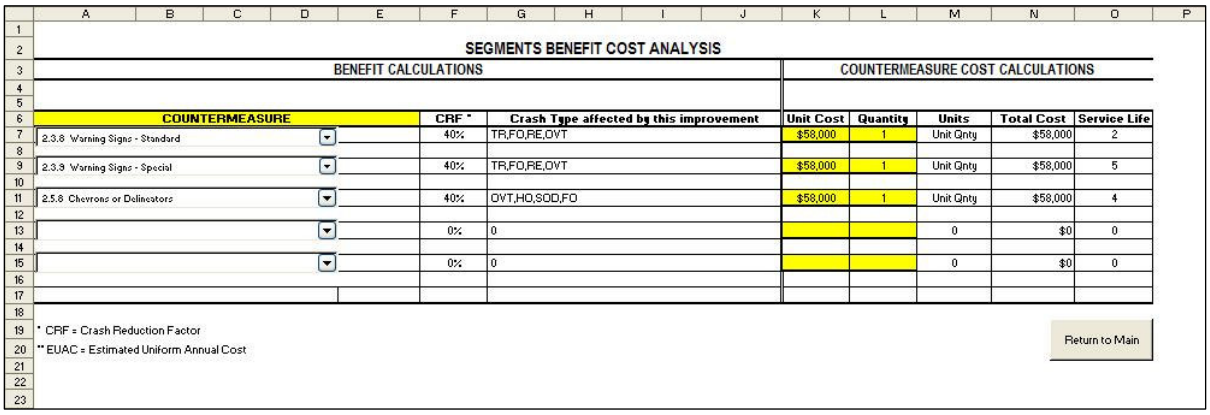
	Angle	Animal	Fixed Object	Head On	Left Turn	Other Noncollision	Other Object	Overturned	Pedestrian	Pedalcyclist	Parked Vehicle	Rear End	Right Turn	Sideswipe Same Direction	Sideswipe Opposite Direction	Turning	Train
	AG	AN	FO	HO	LT	OtherNC	OtherO	OVT	PD	PDC	PKV	RE	RT	SSD	SOD	T	TR
Fatal Crashes	1		1	2				2				1				1	
A-Injury Crashes	15		7	1			1	12		1		8			1	9	
B-Injury Crashes	9	1	15	6		4	3	12	1			20			4	13	
C-Injury Crashes																	
PDO Crashes																	

Return to Main



STEP 12: Select the button labeled **Countermeasure Selection**.

STEP 13: Select 2.3.8 Warning Signs – Standard, 2.3.9 Warning Signs – Special, and 2.5.8 Chevrons or Delineators from the countermeasure dropdown menu.



SEGMENTS BENEFIT COST ANALYSIS

BENEFIT CALCULATIONS			COUNTERMEASURE COST CALCULATIONS				
COUNTERMEASURE	CRF *	Crash Type affected by this improvement	Unit Cost	Quantity	Units	Total Cost	Service Life
2.3.8 Warning Signs - Standard	40%	TR,FO,RE,OVT	$58,000	1	Unit Qnty	$58,000	2
2.3.9 Warning Signs - Special	40%	TR,FO,RE,OVT	$58,000	1	Unit Qnty	$58,000	5
2.5.8 Chevrons or Delineators	40%	OVT,HO,SOD,FO	$58,000	1	Unit Qnty	$58,000	4
	0%	0			0	$0	0
	0%	0			0	$0	0

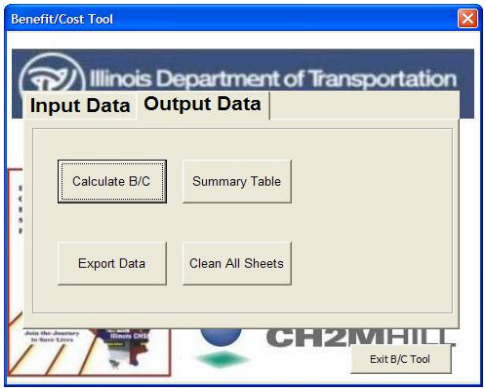
* CRF = Crash Reduction Factor
** EUAC = Estimated Uniform Annual Cost

Return to Main

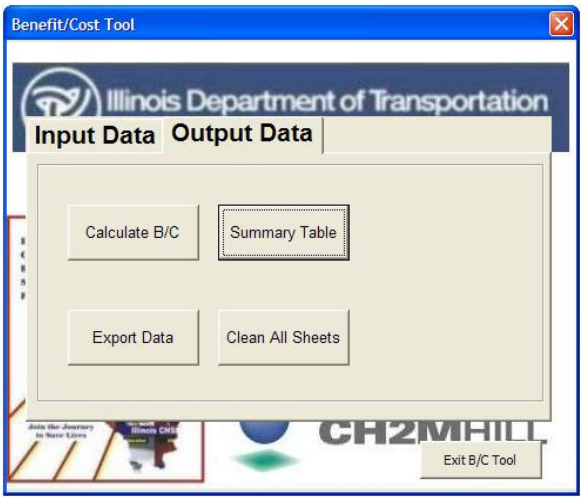
STEP 14: Enter the **Unit Cost** and **Quantity** for the selected countermeasure. When complete, select **Return to Main.**

When all input data has been completed, select the **Output Data** tab on the main menu and the screen shown below will appear.

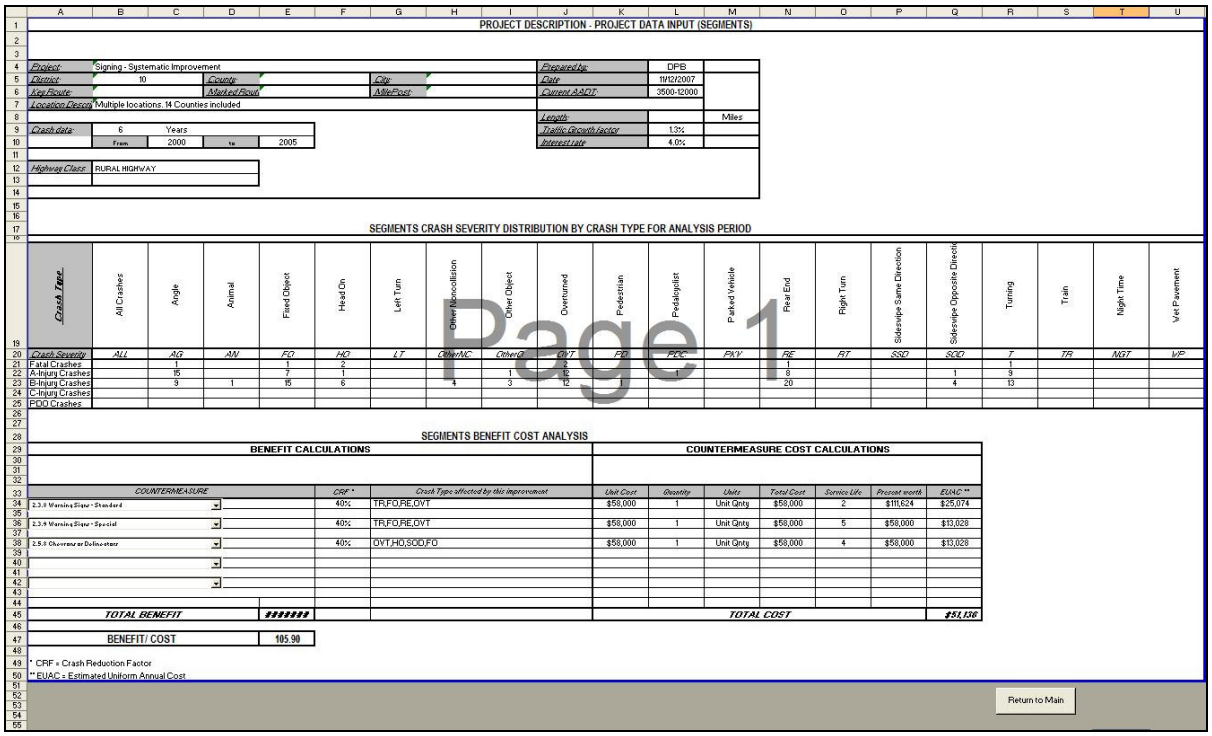
STEP 15: Click on the **Calculate B/C** button to obtain the benefit-cost ratio.



The image to the right will appear with the benefit /cost ratio for this project. Click the **OK** button to return to the main menu.



STEP 16: Select **Summary Table** to see a summary of the analysis or to verify inputs.

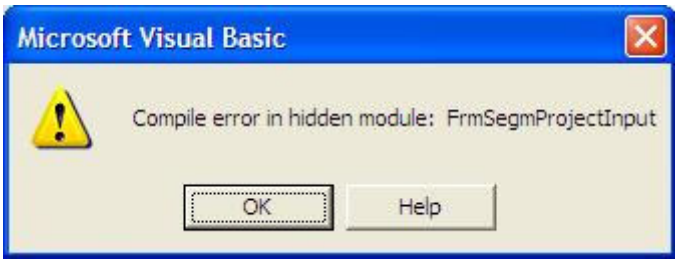


The above window will appear when "Summary Table" is selected.

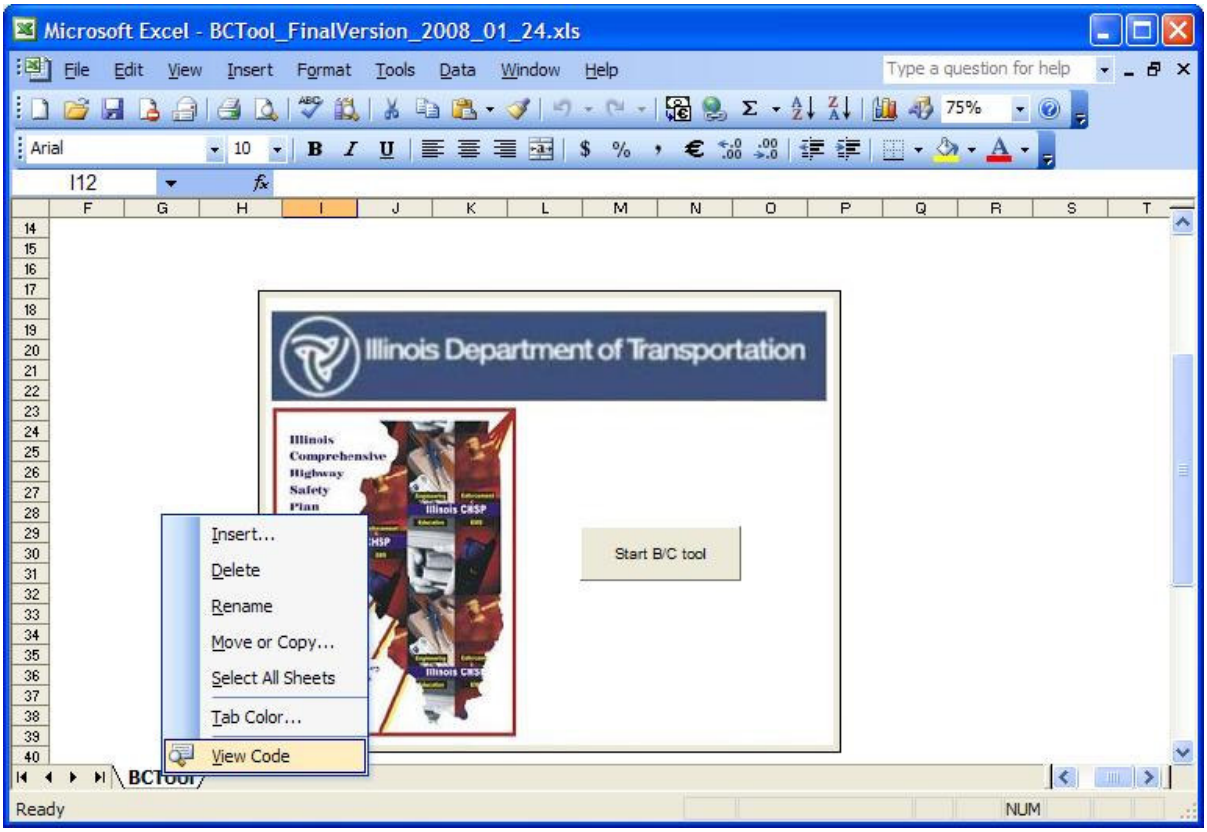
If you would like to save the run, select **Export Data.** This will allow you to save the file with a new name. The file can be opened at a later date and modified if necessary.

Troubleshooting Office 2003

I am getting the error message shown below. How can I fix it?

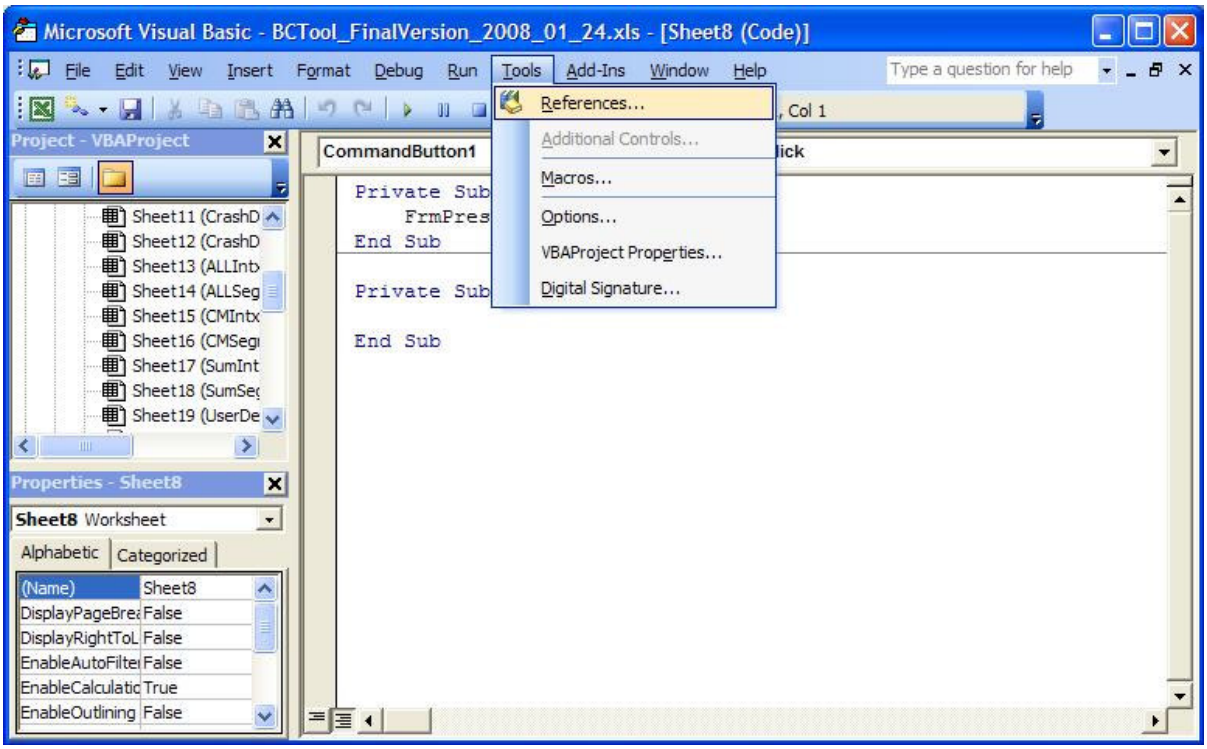


The first step to fix this error is to open the Visual Basic code. Right click on the BCTOOL tab located on the bottom left of the window. Select View Code from the pop up menu

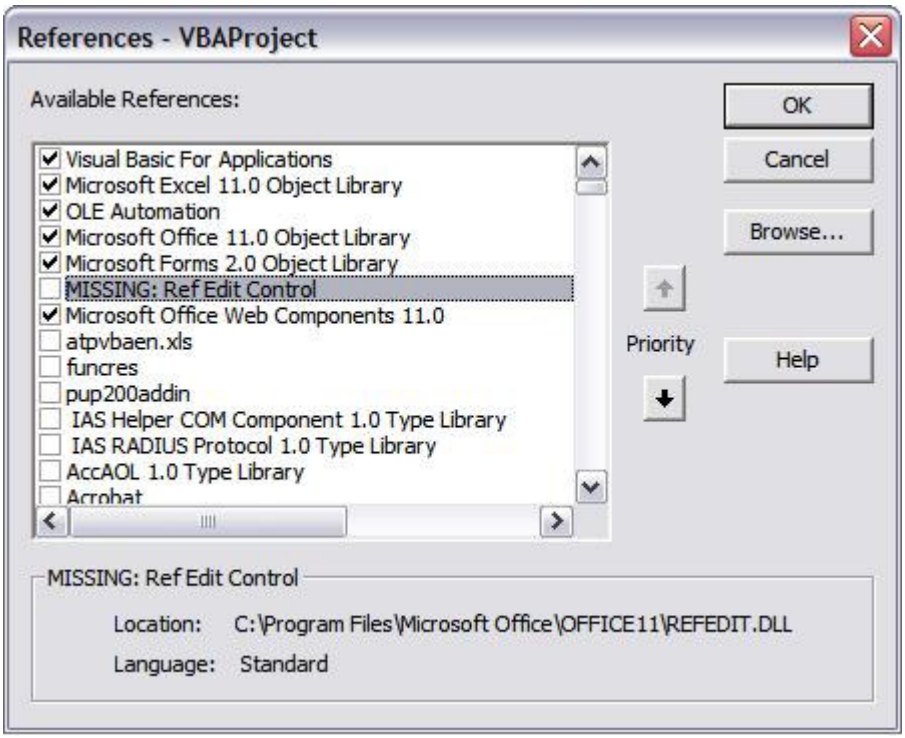


Since the tool is password protected, it is required to input the password (IDOTsafety) in the box shown below. Hit OK to continue.

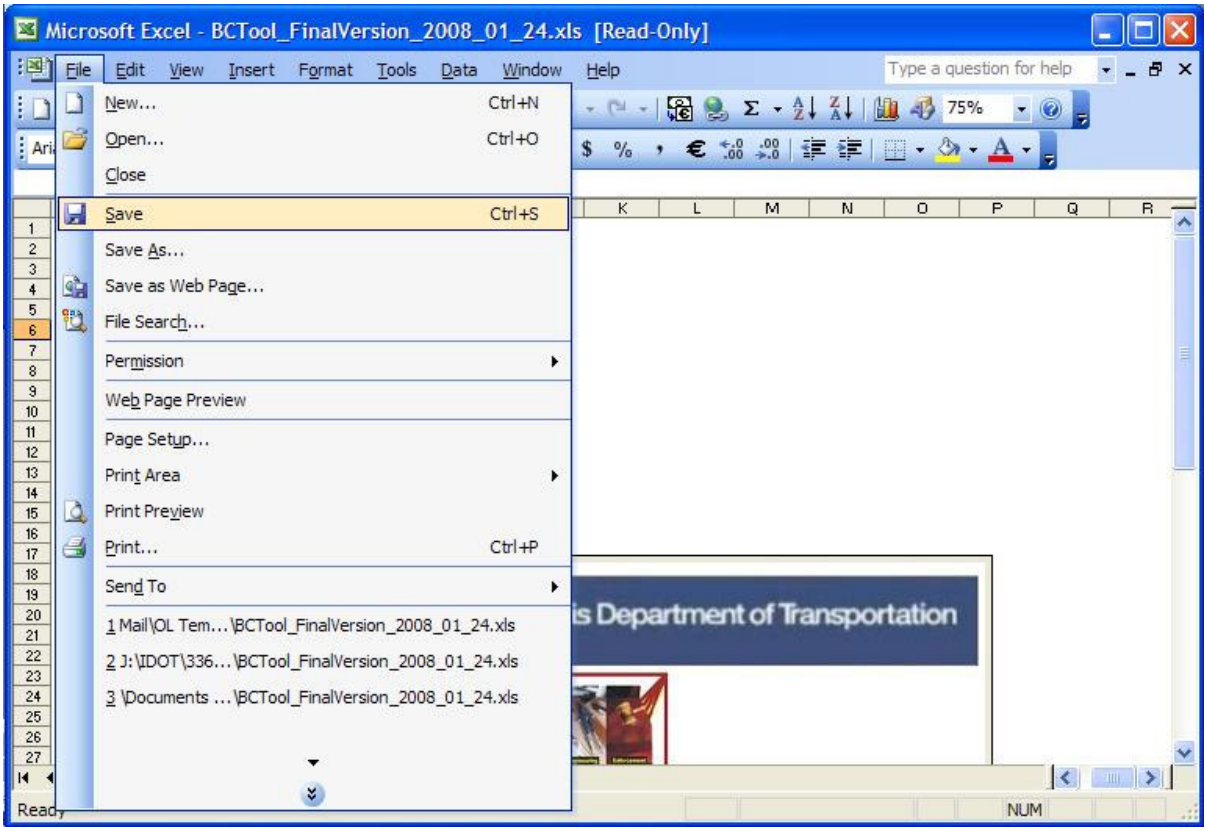
Select Tools – References from the top Microsoft Visual Basic toolbar



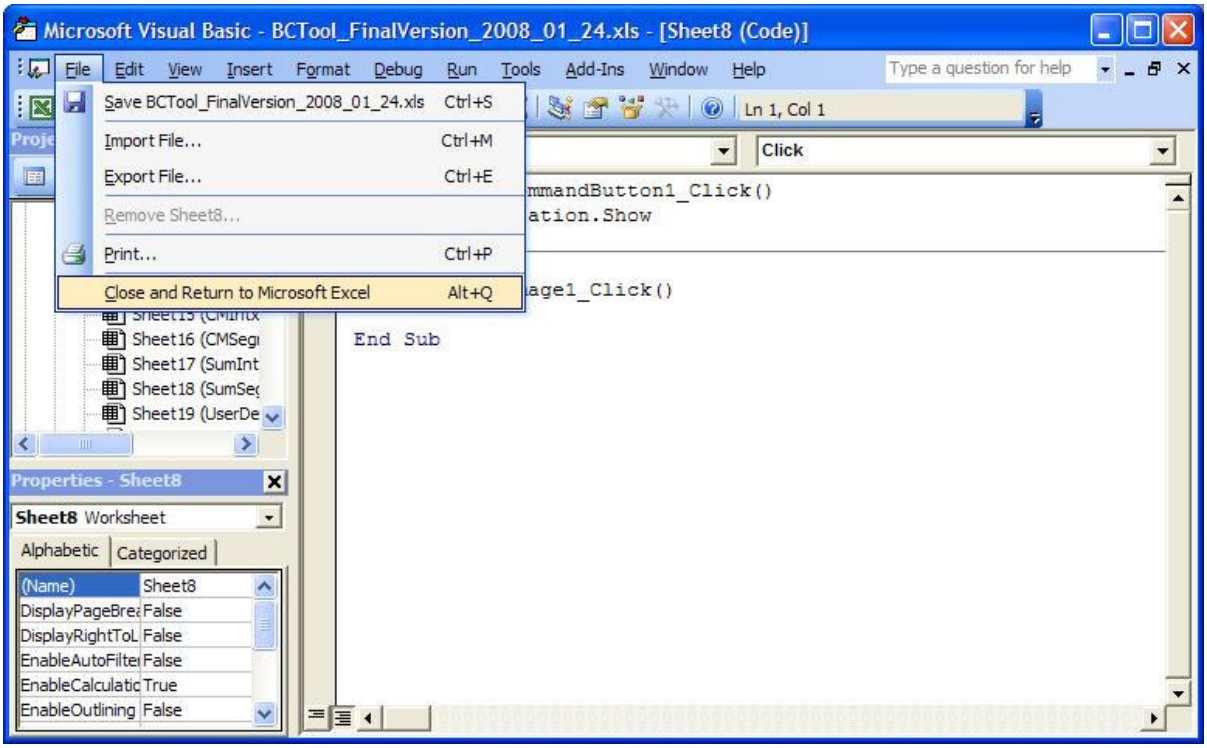
Look for the reference “Missing Ref Edit Control” and unchecked the box. Hit OK to continue.



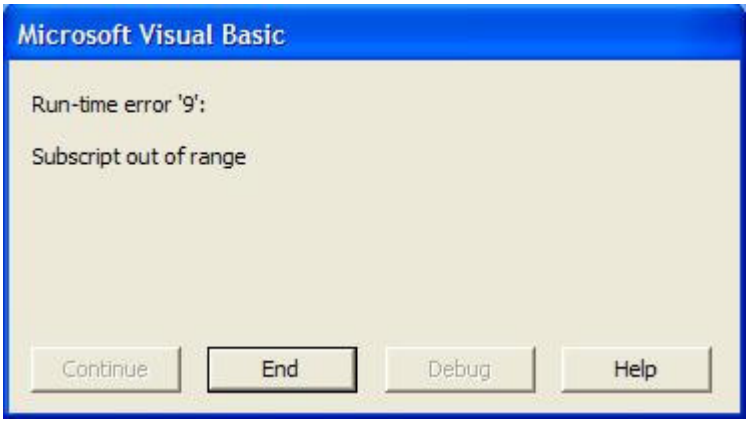
Go back to the Microsoft Excel window, and select File-Save from the top toolbar



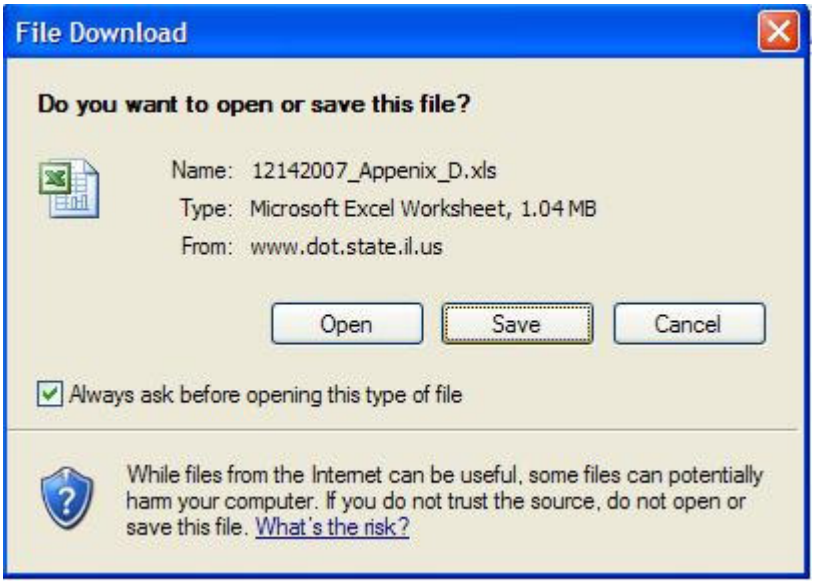
Once the file is saved, go back to the Visual Basic window, and select File - Close and Return to Microsoft Excel. Now you can start using the Benefit Cost Tool.



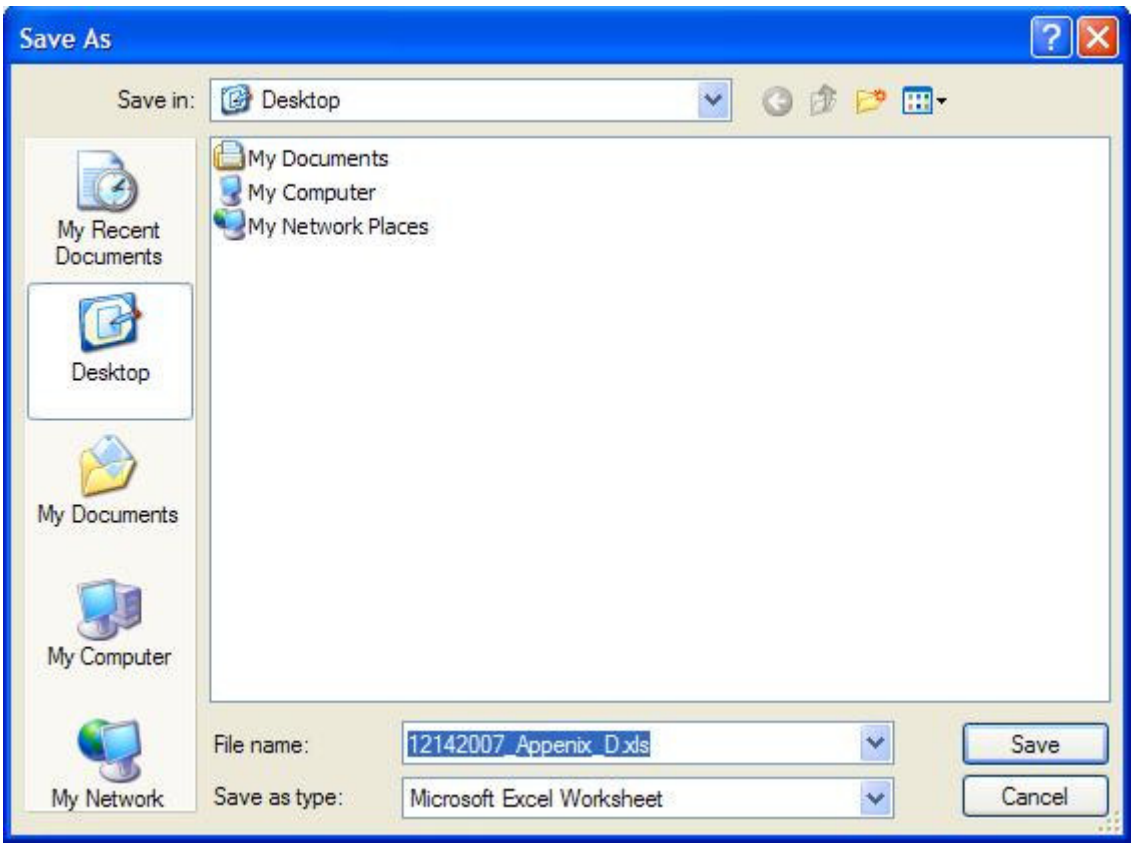
I open the file from IDOT website, and tried to run the tool, but I am getting the error shown below. How can I fix it?



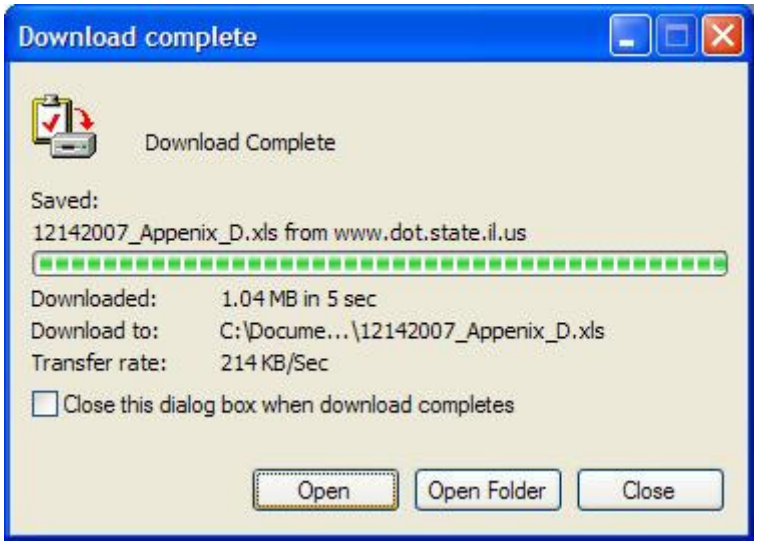
The tool will not work without downloading it and saving it into the computer prior its use. Try downloading the tool, and clicking the Save button



Select the desire location and an appropriate name to save the tool and click Save



After the download is completed, click Open, and the tool is ready to use.



When I open the tool I clicked on Disable Macros, and I cannot have the tool to work. Is there a way of changing this setting?

Yes. Close the tool without saving changes and try to reopen it again. This time make sure to click Enable Macros. This will solve the problem.

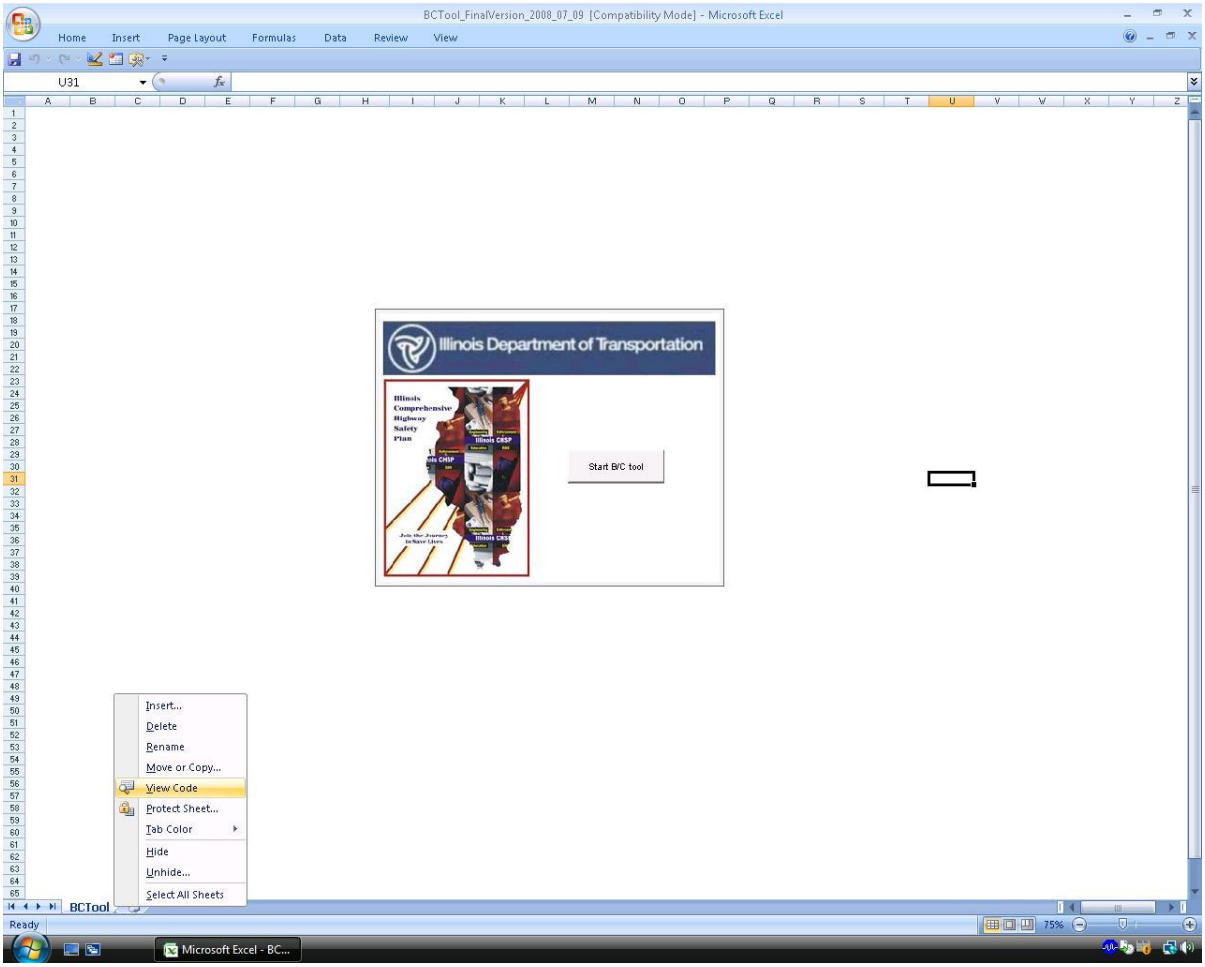
I accidentally saved the tool with the input data for my project inside. Is there a way to obtain the original tool without all the changes I made?

Yes. Go back to IDOT website (http://www.dot.state.il.us/illinoisCHSP/hsip.html) and download and save the tool again in your computer. If you want to save the information you input for a specific project, try using the option export data included in the tool under Output data

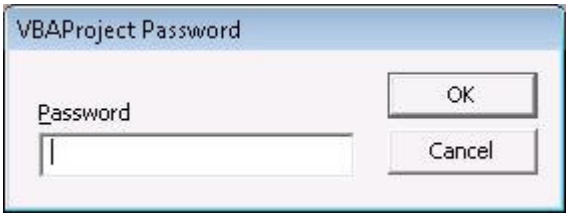
Troubleshooting Office 2007

I am getting the error message shown below. How can I fix it?

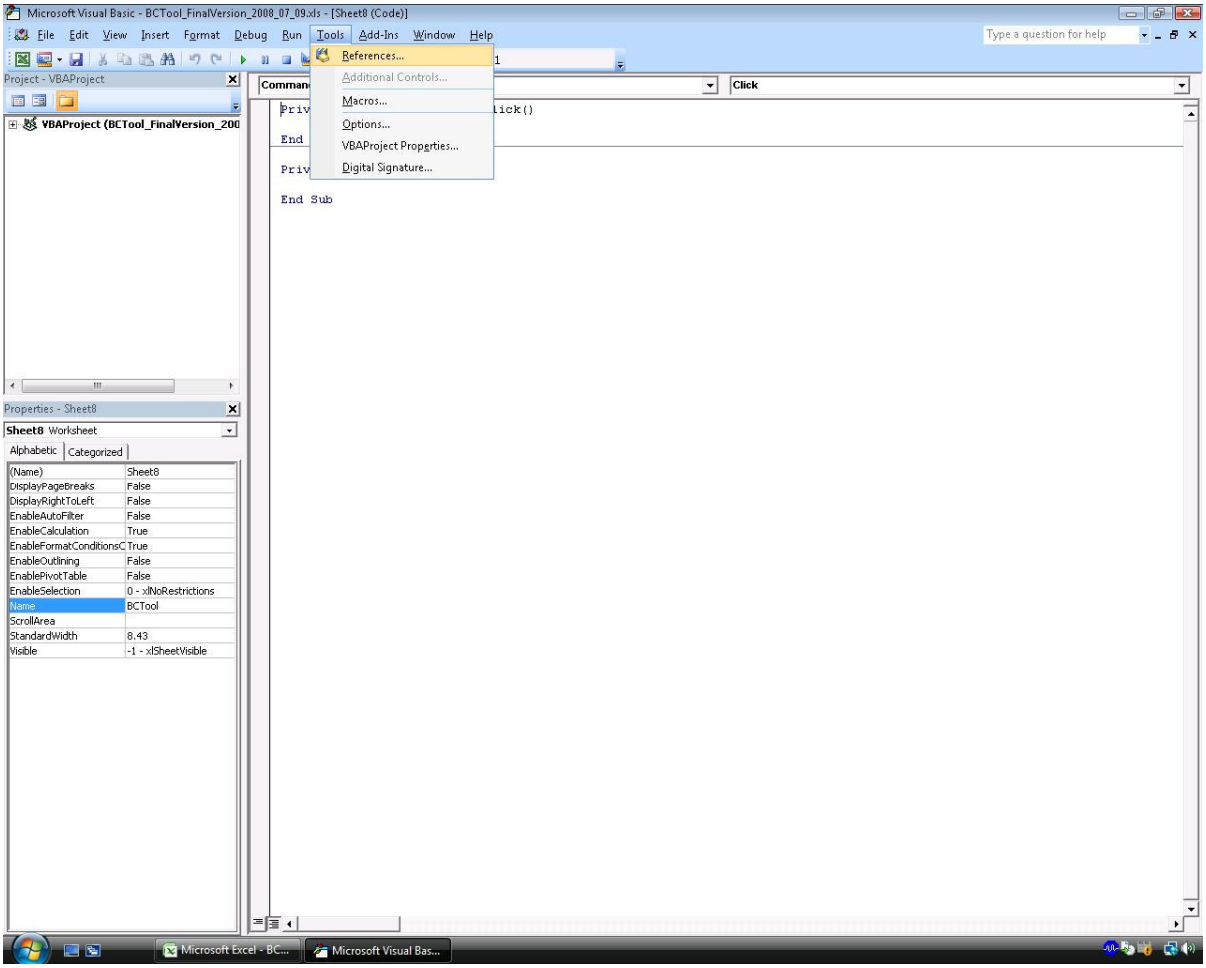
The first step to fix this error is to open the Visual Basic code. Close everything, and reopen the Benefit-Cost Tool. Right click on the BCTOOL tab located on the bottom left of the window. Select View Code from the pop up menu



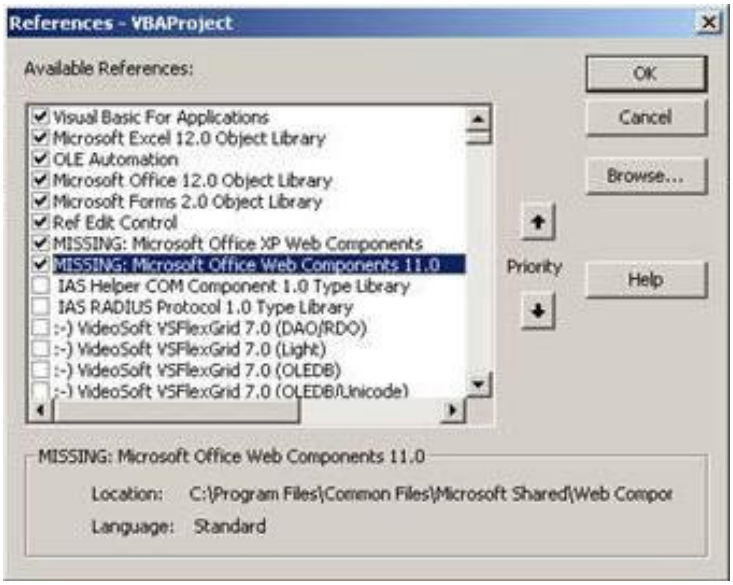
Since the tool is password protected, it is required to input the password (IDOTsafety) in the box shown below. Hit OK to continue. There are some files that are not protected, if you do not see the pop-up window shown below, ignore this step.



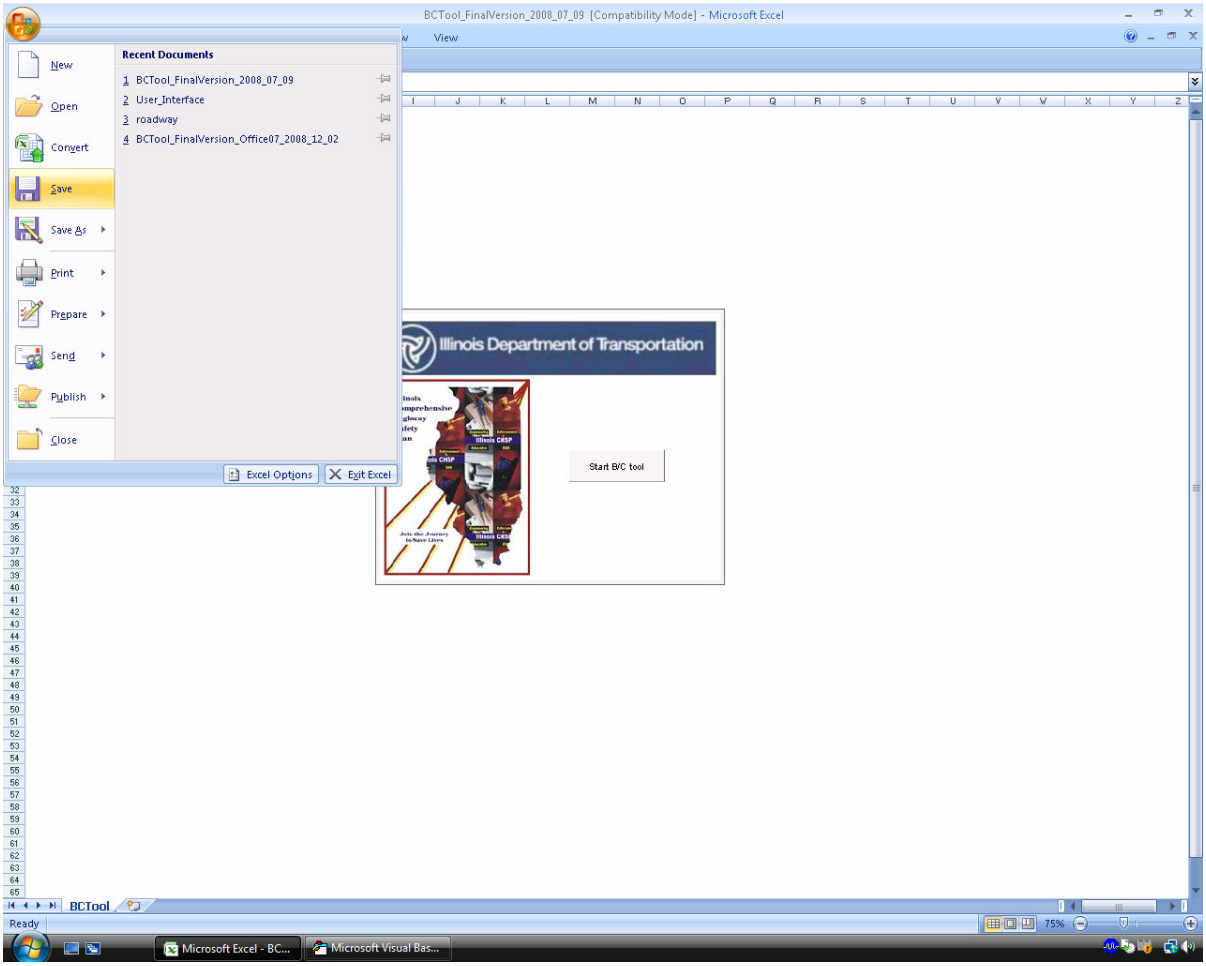
Select Tools – References from the top Microsoft Visual Basic toolbar



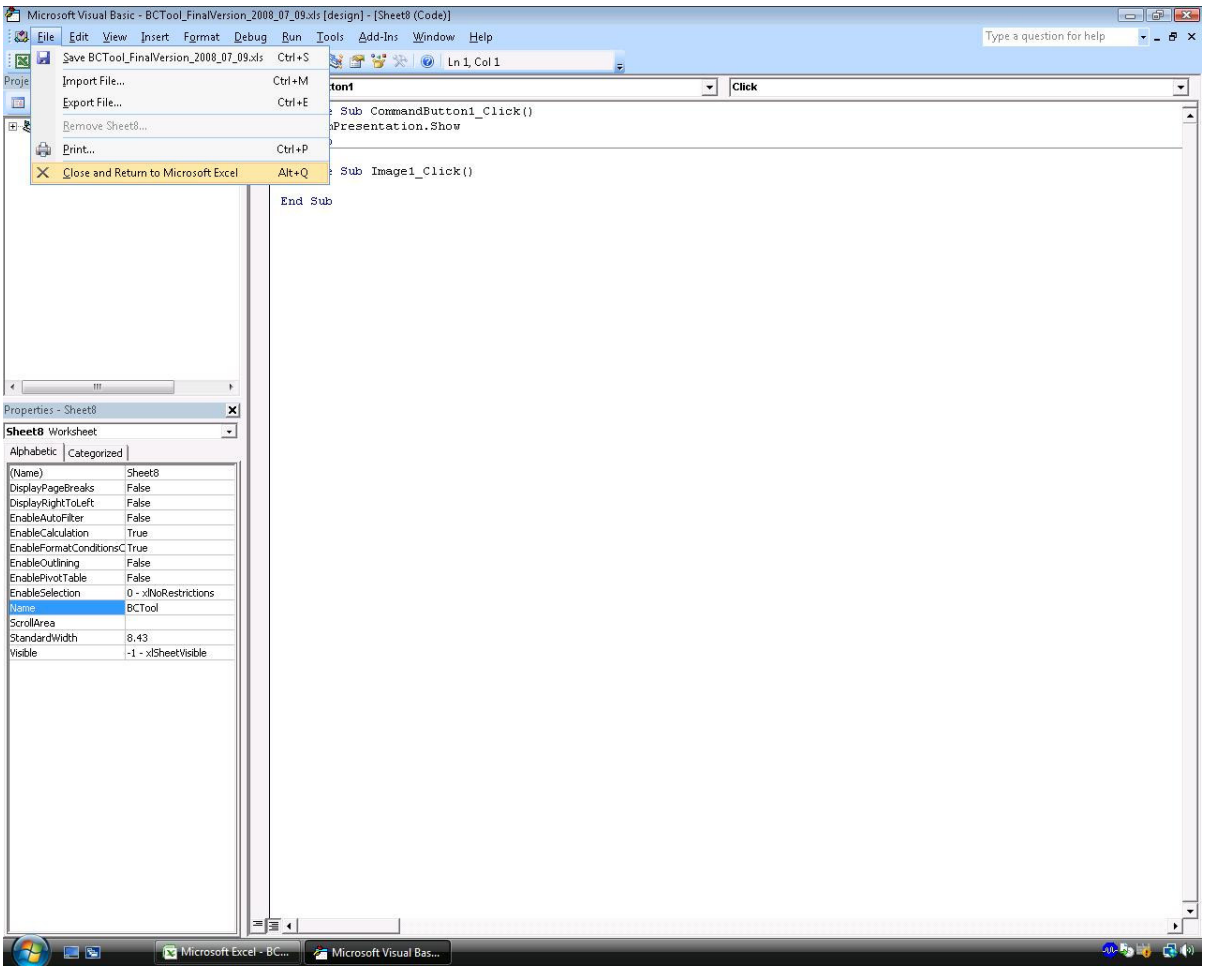
Look for the references “MISSING: Microsoft Office XP Web Components”, and “MISSING: Microsoft Office Web components 11.0” and unchecked the boxes. Hit OK to continue.



Go back to the Microsoft Excel window, and select the Office button-Save from the top left corner



Once the file is saved, go back to the Visual Basic window, and select File - Close and Return to Microsoft Excel. Now you can start using the Benefit Cost Tool.


Microsoft Visual Basic - BCTool_FinalVersion_2008_07_09.xls [design] - [Sheet8 (Code)]
File Edit View Insert Format Debug Run Tools Add-Ins Window Help
Type a question for help
Save BCTool_FinalVersion_2008_07_09.xls Ctrl+S
Import File... Ctrl+M
Export File... Ctrl+E
Remove Sheet8...
Print... Ctrl+P
Close and Return to Microsoft Excel Alt+Q
Ln 1, Col 1
Click
Sub CommandButton1_Click()
Presentation.Show
Sub Image1_Click()
End Sub
Properties - Sheet8
Sheet8 Worksheet
Alphabetic Categorized
(Name) Sheet8
DisplayPageBreaks False
DisplayRightToLeft False
EnableAutoFilter False
EnableCalculation True
EnableFormatConditionsC True
EnableOutlining False
EnablePivotTable False
EnableSelection 0 - xlNoRestrictions
Name BCTool
ScrollArea
StandardWidth 8.43
Visible -1 - xlSheetVisible
Microsoft Excel - BC...
Microsoft Visual Bas...